Observations
ON THE
NATURE OF THE IMMUNITY REACTION.

BY C. J. BOND, F.R.C.S.,
SENIOR SURGEON, LEICESTER INFIRMARY.

PERHAPS one of the most striking examples of cell adaptation to changed conditions is afforded by the response made by the cells of the organism to the attacks of disease. Somatic cells and body fluids acquire new characters in response to external influences, and the characters so obtained are transmitted to the cell descendants of the cells which acquire them, and the condition known as "acquired immunity" is the result.

It becomes important, therefore, to inquire whether the conditions under which the response against disease is made throw any light on the essential nature of the process by which all "use acquirements" are made by cells exposed to altered conditions of life. Whether, in fact, the examination of the conditions of the immunity reaction suggests the occurrence of any variational or selectional process among the cells, or the component parts of the cells, exposed to the changed conditions, or whether it suggests a more direct relationship between the change in the environment and the change in the cell, a readjustment of the internal relations of the cell to the changed environmental relations, brought about in some way by a direct action of the environmental stimulus on the cell structure, wholly independent of any preliminary experimentation in adaptation, or any testing of adaptational steps by any standard of fitness afforded by the welfare of the cell as a whole, or the welfare of the organism of which it forms a part.

Although, as will be shown later, the distinction involved in the terms used is probably an artificial one; although, as we shall be able to show, the origin of new characters by "variation and selection" on the one hand, and by "use acquirement" on the other, is fundamentally one and the same process, yet, for our present purpose, the question to be considered is: Whether the new characters which arise in certain body cells as the outcome of a response to attacks by disease organisms owe their origin to "variation" *among* the cells or to a "use acquirement" *on the part of* the cells exposed to the change.

Since the appearance of these new characters represents an adaptive change on the part of the cells concerned, this involves the further question, whether all cell adaptation to altered conditions of life is a "use acquirement" or a "variational and selectional" process, or a "mixture of both."

Although there is no complete agreement among pathologists as to the number and kind of body cells that should be included in this group of what I propose to call "defensive cells," yet all agree that those cells which are to be found at some stage or other of their life-history in the blood or lymph streams should certainly be included in such a category.

It matters little, from our present point of view, whether the struggle between the defensive cells and the disease organisms takes place at close quarters, and depends on a contact reaction between phagocytes and bacilli, or whether it occurs at longer range between "the fixative and digestive secretions of the defensive cells" on the one hand, and "the toxins of the disease organisms," after these have been shed into the blood stream, on the other.

It makes no real difference to the special problem of the origin of new cell activities and new cell capacities, whether we discuss the immunity problem in terms of amboreceptors and haptophore and toxophore groups, or whether we describe it simply in terms of toxins and antitoxins. The essential point is that the immunity reaction itself consists in the exercise of certain capacities of *defence* on the part of the body cells in response to the exercise of certain capacities of *offence* on the part of the bacilli or cocci or protozoa which cause the disease. The question, therefore, is whether the new characters which arise on both sides are "use acquirements" on the part of the individual cells concerned, whether they arise as favourable "variations" among some of the cells during the cell proliferation which accompanies the struggle, or whether they arise as favourable "variations" among the living units, the physiologically differentiated parts which compose the individual cells. Partly by a process of chemo-therapy and partly by growing the organisms in partially immunized hosts, Ehrlich established a strain of trypanosomes immune to certain substances, and capable of transmitting the immune character to their cell descendants for many generations. He states, in reference to this new strain, that it is of little consequence whether it arose as a "mutation" or as a fluctuating "variation." However this may be, it certainly is important to know whether this new character, this immunity against arsenic and fuchsin, was acquired by the individual trypanosomes during growth under the new conditions, or whether it arose as a favourable variation among some of the trypanosomes during the increased struggle for existence and the destruction of trypanosomes brought about by the change in the environment.

Ehrlich[3] himself not only brought forward evidence to show that there is an increased struggle for existence among the organisms during the process of chemo-immunization, but he also suggested that it was brought about by a partial starvation of individual trypanosomes by the blocking of their nutri-receptors by antibodies derived from the cells of the host.

We know that when a struggle for existence occurs, together with a multiplication of the contending organisms, the conditions are present which favour the origin and selection of favourable varieties of new characters, rather than the establishment of use acquirements.

Thus, then, in regard to the disease organisms there is presumptive evidence that they adapt themselves to new conditions, and acquire new characters by a process of "variation and selection" during the process of struggle for nourishment between themselves and the body cells of their host.

Another important fact has been established concerning the immunity response. Largely through the labours of Ehrlich and his co-workers it is becoming increasingly clear that the process by which the body cells respond to disease organisms and their toxins is the same kind of process, slightly modified, as that by which they respond to nutrient material.

In order that it may assimilate nourishment the cell must sooner or later get into intimate cell contact with the material it is to assimilate. The same thing is true in the disease response. The cell treats the disease organism and its secretions as so much proteid material, suitable or unsuitable for assimilation. It is attracted to or repelled from it, and if the circumstances of the reaction allow of such a process, it ingests and assimilates the bacillus by a process of phagocytosis. The cell endeavours to treat the toxin in the same fashion. It fixes and neutralizes it by a complex machinery of amboceptors and digestive complementary molecular groups shed into the blood stream.

The essential point is that the "defensive" cells, when occupied in resisting disease organisms and their secretions, are engaged in a response in which they, or their ancestors, have had some experience in an allied nutritional form, and of which the immunity reaction is a "variant."

After these preliminary remarks we may now examine more closely the conditions under which the disease response takes place.

We know that in the case of all adaptive responses made by higher organisms to changes in their environment (provided that the change be not too sudden or too violent) the essential elements in the conditions of response are a certain rate (generally a considerable rate) of increase in numbers, and a certain rate (generally a considerable rate) of mortality among the individuals exposed to the change. We shall find a corresponding high birth-rate and high death-rate among the "defensive cells" exposed to the attacks of disease organisms.

In every disease, due to microbic infection, there is an incubation period intervening between the entrance of the disease organisms into the body and the commencement of the invasion phase of the disease. During this variable period there are reasons for thinking that the disease organisms are engaged in cell multiplication, and in the

elaboration of toxins, haptophore and toxophore groups, to fit the nutri-receptors of the defensive cells.

The invasion stage itself is marked by severe symptoms which indicate a more or less profound change in the environment of the body cells, due, in Ehrlich's language, to the anchoring of the disease organisms or their receptors to the side chains of the body cells.

The succeeding stage of illness, with its periods of remission and intermission, is associated with recurring sheddings of saturated, and the reanchoring of regenerated receptors on both sides, with a mutual neutralization of the toxophore and antibody groups on either side. This process may end in recovery by crisis, in which a sudden fixation and neutralization of toxin occurs, together with a more or less wholesale destruction of the disease organisms, or it may end in lysis, a more gradual but essentially similar process, in which the disease organisms and their toxins are neutralized and destroyed in successive stages.

Under certain conditions some of the organisms worsted in the struggle may retire to tissues or situations in which they are less exposed to attack, or they may succeed in surrounding themselves with protective capsules, or they may remain quiescent in the more resistant spore form, and under favourable conditions of lessened resistance on the part of the host may again become active and bring about a relapse, or, in "variational terms," screened from immediate attack, they undergo cell multiplication, and vary in the direction of, or acquire greater virulence, as they become armed with more virulent toxophore and more efficient haptophore receptors and renew their attack on the defensive cells.

Such are the phases of the disease response; the very step-like interrupted character and the varying intensity of the process suggest the operation of "variation and selection" among the contending cells and disease organisms. If recovery were wholly synonymous with the increasing development by exercise of a capacity of "*defence*" by the body cells, and the decreasing exercise of a capacity of "*offence*" by the disease organisms, no adequate explanation seems forthcoming of these sudden changes in the intensity of the process, or of these rises and falls in activity on both sides.

If, on the other hand, recovery denotes the origin of additional adaptations arising as variations, in or among the defensive cells, and relapse, recurrence, and death indicate further variation in offensive capacity in the disease organisms, then the alternation between the inactive and the active phases in disease coincides with the transitional stages between increased variation on both sides.

In the course of every disease, at some stage or other, there are some traces of death and injury amongst the body cells. We need only recall the high rate of mortality among the polymorph leucocytes which occurs in suppuration. Such a high rate of mortality may itself be evidence of a powerful positive chemiotaxis on the part of the cells, and it may indicate a successful reaction.

There is also the desquamation and the exfoliation of the older epithelial cells of skin or mucous membrane in the exanthematous fevers. The muco-purulent secretion thrown off by the mucous membranes when invaded by micro-organisms of many kinds; the loss of staining reaction denoting death in the aggregations of phagocytes and giant cells, which surround imprisoned colonies of tuberculous and other bacilli, both are associated with the defensive reaction and the recovery process.

The phenomenon of phagolysis, especially of macrophages, described by Metchnikoff, and regarded by him as a necessary preliminary to the liberation of cytases into the blood stream by phagocytes, affords direct evidence of cell mortality whatever may be its intimate relation to the bactericidal property of immunized serum.

All these phenomena provide examples of the high cell death-rate which accompanies the disease process. But there are important indications that what is true of the defensive cells as a whole in the disease response, is true also of their physiologically differentiated cell parts.

There is every reason to think, judging from the analogy of the division of nuclear material in germinal reproduction, that such a physiological differentiation of molecular cytoplasmic and nuclear structure exists in every cell, even though we may not be able to recognize it in any structural modification under the microscope. The very fundamental facts of immunity, as interpreted by the most sound and far-reaching of all the theories hitherto propounded (that is, Ehrlich's), strongly suggest the occurrence of differentiation.

Ehrlich has shown that there must be a shedding into the blood stream of some such physiologically differentiated portions of defensive or body cells, that there must be a throwing off of molecular groups of a highly complex and specific stereo-chemical composition—for example, amboceptors, since bodies of this kind can be recovered from the blood stream in combination with the toxin groups, which they have "fixed," and from which, by appropriate means, they can again be split off. Further, these same bodies, in the shape of receptors, while still in organic union with the body cells, serve to anchor the toxophore groups to these cells in the same way that, under normal conditions, as nutri-receptors they anchor nutrient material to the same cells.

The fundamental facts concerning disease as a whole point in the same direction. The bodily wasting which means cell destruction, or destructive changes in cell parts, the haemolysis, the cytolysis, all these processes are closely associated with the disease response.

Cell regeneration and cell proliferation are both also constant characteristics. We need only recall the regeneration of red blood corpuscles, of leucocytes, of lymphocytes, of microphages, of macrophages, and of tissue cells.

But besides the regeneration of individual cells destroyed by the toxins of the disease organisms, there is also an abundant regeneration; in fact, an over-reproduction of physiologically differentiated cell parts. The enormous volume of antibodies and antitoxins found in the blood stream, in proportion to the dose of toxin administered during the process of immunization, affords abundant evidence of the regeneration and reshedding of such molecular groups by the body cells exposed to the activities of the disease organisms.

This conception of the process of cell destruction which occurs during disease, as representing a mortality-rate among imperfectly adapted cells, and as the discarding of so much unfit material, and the process of cell regeneration as a process which is useful in favouring the origin by variation of more fit and more fully adapted cells, is, I think, in harmony with general biological conceptions.

If, on the other hand, we conceive of the adaptive changes arising in cells, exposed to the attacks of disease organisms, as so many direct reactions made by the cells to an environmental change of a chemical kind, and as so many "use acquirements," then it is not easy to account for the cell destruction which undoubtedly figures so largely in the disease response; for if the cell as a whole, when exposed to such a chemical change as that brought about in the nutrient medium by the toxin of a disease organism, readjusts its molecular constitution, and brings it into harmony with the change in the environment, there is no necessity for the destruction of the cell. If, on the other hand, the fully-formed cell exposed to such changes cannot so adjust itself, while some of the younger and less highly differentiated cells can so adjust themselves, or are already so adjusted, then the principle of "variation and selection" is at once introduced into the adaptive response.

It is admitted by all, even by those who uphold the "*direct adaptational*" view of the immunity response, that the process of adaptation by "use acquirement" is a gradual change, and that it occurs in stages in which the more perfectly adapted succeed the less perfectly adapted.

The crucial difference between "direct adaptation or use acquirement" and "indirect adaptation by variation and selection" depends on the conditions under which the response is made, and these in the case of the disease response are as follows:

In the "direct" or "use acquirement" form the adaptation is made by the individual cell or the physiologically differentiated parts which compose the individual cell exposed to the environmental change, whereas in the "indirect" or "variational form" the adaptive change is not made by the individual cells exposed to the new conditions; these, being unable to undergo the required molecular readjustment, perish, while the new characters arise, as adaptive variations, in the younger cells or

"mother cells" stimulated to active cell division by the destruction and removal of the older cells.

Look at the facts, however, as we may, we are always coming across struggle for existence, cell destruction, and cell regeneration in recovery from disease. They occur not only among individual phagocytes, but also among the physiologically differentiated cell groups, the amboceptors and receptors which compose the phagocytes.

Moreover, there is a quantitative side to this relationship, between struggle and recovery in the disease response. A high cell birth-rate and a moderate cell death-rate are characteristic of a successful response and of recovery, whereas a low cell birth-rate and a wholesale cell death-rate or injury-rate are characteristic of the unsuccessful response in which there is no time for the readjustment of cell parts, or for the origin of new and more fully adapted cell varieties.

It is very necessary to bear in mind this cell destruction when deciding between "use acquirement" and "innate variation" as possible causes of the origin of new characters in somatic cells in response to disease.

Conditions involving injury and death of numbers of individual cells are really incompatible with the origination of new characters by "use acquirement." The nerve cells, which are capable of making use acquirements in the highest perfection, do not undergo injury as cells or perish in the process of acquiring new modes of response to changes in nerve stimuli. On the other hand, a high rate of multiplication among organisms, together with a high rate of mortality among those which are less perfectly adapted, strongly suggests that a process of adaptation by selection is going on in consequence of some change in the conditions of life.

Consequently we are led to believe that both the "direct" and "indirect" forms of adaptive response are present during the response to disease—the immunity reaction.

Moreover, we are not without direct evidence of the fact that the body cells, and especially those of them which form the defensive group, are as a whole (like the highly variable disease organism to which they are exposed) very variable as regards these defensive capacities.

There seems to be no hard and fast line of demarcation between "natural immunity" on the one hand and "acquired immunity" on the other. Among naturally immune races, some individuals exhibit this natural refractoriness to certain disease organisms in a higher degree than others. In acquired immunity the artificially-acquired immune state persists longer in some individuals than in others in reference to the same disease.

There are, indeed, indications that, through the operation of natural selection, this variability in capacity of response to disease organisms and their secretions on the part of the defensive cells has assumed a selection value among the body cells, just as a corresponding variability in capacity of offence and defence against the attacks of body cells has assumed selection value in the case of the disease organisms.

Acquired Immunity.

The foregoing statements must now be submitted to the test of experience, and the various kinds of immunity must be considered, especially that state of resistance to subsequent invasion which results from recovery from any one of the zymotic diseases, and is known as "acquired immunity."

The individuals of certain races which have had a sufficiently long experience of certain non-lethal diseases such as scarlet fever and measles, possess an innate capacity, not to resist invasion, but to recover from the disease if exposed to infection, in a greater degree than individuals belonging to races which have not had experience of such diseases.[4] This means that the body cells of such individuals are enabled by the exercise of the innate capacity of recovery to transmit to their cell descendants another kind of capacity, or the same capacity in a more perfect form, namely, a power to resist invasion—that is to say, a capacity to become adapted after experience to any given environmental change, is transmitted to cell descendants (not to offspring) as a capacity of preadaptation to a subsequent occurrence of the same change, independently of preceding experience by such cell descendants.

Further, it is well known that the degree of persistence of the immunity so acquired stands in direct relation to the specific nature and activity of the disease organism causing the disease, in so far as that specific character is associated with a capacity to establish widespread and intimate relations with the body cells of the host—in so far, in fact, as specific character goes with capacity to bring about generalized systemic infection.

Thus while reaction to the small-pox organism (which, as shown by the generalized rash, causes widespread infection) results generally in a lifelong immunity, reaction to the organism of vaccinia results in a more transient immunity.

Moreover, in vaccination the degree of persistence stands in direct relation to the number and size of the vaccine pustules, that is to say, to the volume and intensity of the reaction made. In this way vaccination reduces the persistence of acquired immunity because in vaccination use is made of an organism which has undergone varietal change and reduction in virulence.

Vaccine-therapy, on the other hand, increases the persistence of "acquired immunity" by inducing a wider and more complete response on the part of the defensive cells to the disease organisms or their toxins.

Again, the persistence of "acquired immunity" in any given case is reduced by any kind of treatment which tends to destroy the disease organism or to reduce its virulence soon after it has gained an entrance into the body. Such chemo-therapeutic treatment acts by qualitatively and quantitatively reducing the reaction made by the organism to the disease. Thus after treatment by salvarsan in early stages the Wassermann reaction in the syphilitic patient becomes negative, and the immunity to subsequent reinoculation by the *Spirochaeta pallida* is less persistent than in cases in which the disease has pursued a longer course.

Antitoxin treatment probably acts in the same manner. The toxins formed by certain organisms which grow on the surface of the mucous membranes are fixed in the blood stream at an early stage of the infective process. Thus the reaction made against the disease organisms is limited to the blood stream, and its volume and intensity is thereby reduced.

Thus in the treatment of diphtheria by antitoxin, the saturation and fixation of the toxophore groups in the blood stream of the patient, by the foreign amboceptors furnished by the immunized animal, restrict the reaction to the body fluids, and prevent that intimate cell contact between toxophore groups and defensive cells, through the medium of sessile receptors, which would have occurred if unsatisfied amboceptor groups had not been injected in the shape of antitoxin. Consequently under such circumstances the body cells do not experience the same intense stimulation, and so do not respond so effectively, or suffer the same starvation, and so respond by cell regeneration and cell variation and selection, according to whichever view we adopt of the origin of new adaptive characters in somatic cells, when exposed to new stimuli.

This association between persistence of acquired immunity and intimacy of cell contact between toxins and defensive cells is also illustrated in an interesting manner by the suppurative diseases.

As a rule, and speaking generally, the pyogenic infections (that is, diseases associated with suppuration) do not confer an acquired immunity of long duration. The recurrence of localized staphylococcal and streptococcal infection foci is common in the same individual. This coincidence, which appears at first sight contradictory, is probably due to the fact that the reaction under such circumstances is a more or less localized response, limited, as far as cell contact goes, to the body cells and defensive cells in the neighbourhood of the foci of infection. This interpretation is rendered probable by the fact that in these diseases those attacks confer the longest immunity in which the infection is most generalized. Thus, septicaemia is more protective than localized abscess.

We may summarize the foregoing facts by saying that in "acquired immunity," when the capacity of recovery is exercised under normal conditions of response—that is to say, when a complete reaction has been made to a disease organism of a degree of virulence normal to its species—then the resulting immune state is usually lifelong, whereas, when the capacity of recovery has been exercised

under abnormal conditions of response—that is, where the reaction has been incomplete, or made towards a disease organism of reduced virulence, or where the reaction has been cut short by the early destruction of the disease organism or its toxins in the body of the host—then the resulting immunity may be transient.

In certain chronic or subacute diseases in which the offensive powers of the disease organism and the defensive capacities of the body cells are more evenly balanced, the slight immunity acquired may be so transient as to permit of frequently renewed infection. Thus, in tuberculosis the disease response is made up of a series of invasions or recrudescences, alternating with a series of partial or local recoveries; and the object of vaccine-therapy in such diseases is to stimulate the body cells to a larger and fuller reaction, with the hope that a more persistent and more complete state of immunity will so result.

So far we have been considering instances of what may be termed a normal relationship between the conditions under which the recovery from the disease has taken place and the persistence of the immune state which follows the recovery so made.

It is, however, necessary to mention certain exceptional cases in which this normal relationship is interfered with, or, at any rate, has the appearance of having been disturbed.

In certain individuals belonging to races which have had experience of, and therefore have undergone evolution in regard to certain diseases, an attack of any of the zymotic diseases such as scarlet fever or measles (generally a mild attack in childhood) may be succeeded by a second, third, or even a fourth attack, generally more severe, in adult life. Although more observations are needed on this point, there is some evidence which tends to show that this peculiar tendency to reinfection sometimes occurs in several members of the same family. In these exceptional cases the capacity to recover persists, while the acquired capacity to remain immune against subsequent infection is diminished or lost.

This leads us to consider the whole question of the persistence of "acquired immunity," and to inquire what it is that occurs, when susceptibility to infection by any disease returns after a period of insusceptibility following recovery.

One point about this loss of "acquired immunity" seems well established—it has no necessary connexion with, and therefore is not caused by, any relaxation of the stringency of selection of resistant varieties of defensive cells. Thus the infection of small-pox may be entirely absent from the environment for long periods of time, and yet the immunity acquired against subsequent infection by one attack of the disease may be lifelong, whereas the infection associated with vaccination may be repeatedly introduced into the body, and the "acquired immunity" which results from vaccination, and revaccination, may be transient.

At the same time we are ignorant of the way in which the immunity of short duration conferred by vaccination differs from the immunity of longer duration conferred by an attack of small-pox. The difference cannot be wholly and entirely one of completeness or intensity of reaction, for the immunity to revaccination while it lasts is as complete as the immunity to reinfection by small-pox while it lasts. Moreover, the loss of "acquired immunity" seems to take place gradually and not suddenly. Individuals gradually become more susceptible to revaccination as time elapses since the last vaccination was practised.

It is interesting to compare this continuous fall in resistance in "acquired immunity" with the irregular and apparently sharply differentiated phases of susceptibility and insusceptibility to disease which occur during the lives of non-immunized individuals, who, although susceptible, and although exposed to infection on frequent occasions, only contract certain diseases under special conditions as yet imperfectly understood.

Apparently these irregular alternations of susceptible and insusceptible phases only occur in individuals who, through racial experience of disease, have inherited some innate capacity of recovery. For if a number of individuals belonging to a race which has not undergone any adaptation to a disease are exposed simultaneously to infection, all, or the great majority of the individuals so exposed, at once contract the disease, that is, they are found to be all susceptible at the same time. This curious fact again points to the intimate connexion between capacity of recovery and the immune state which results from its exercise.

When we compare these exceptional cases with the constant association which undoubtedly exists between the completeness and intensity of the recovery reaction, and the duration of the immune state which results from it, we are led to perceive some relationship, not only between the persistence of acquired immunity and the exercise of the capacity of recovery from which it results, but also in a somewhat ill-defined manner between this varying state of susceptibility to infection during the individual life and the possession of an innate, racially derived, capacity of recovery, even although that capacity has not been exercised by the individual possessing it.

It will be interesting to know whether, in a reciprocal manner, the capacity of recovery undergoes any corresponding increase or decrease during these positive and negative phases of higher resistance and increased susceptibility, whether, in fact, such an individual recovers more easily if he contracts a disease during a period when he is only slightly susceptible, than he does if he contracts the same disease during a period of greater susceptibility.

Though it is difficult to explain all the cases in this way, it is of course possible that some of these irregular cases, in which infection occurs at one time and not at another in susceptible individuals, depend on the dose of infection received, and the route by which it gains entrance into the body. That is to say, an inherited capacity of recovery may be equal to successfully resisting a small dose of infection, but may be unable to deal with a larger dose rapidly introduced, until the capacity has been strengthened by exercise during actual experience of the disease.

But if we explain the facts in this way we are compelled to regard "acquired immunity" as a more complete form of the capacity of recovery, by the increased exercise of which the immune state itself has been brought about. We must, in fact, regard "acquired immunity" resulting from recovery from disease after individual experience, as the same thing as the "natural immunity" which results from the recoveries made by favoured individuals during racial experience of the same disease. This would mean that a capacity exercised in response to the stimulus of "use" has been converted into a capacity exercised in response to the stimulus of "nutrition." Or, in other words, that a pre-experiential character, a preadapted capacity to resist invasion, arises as the result of the exercise of a post-experiential character, a capacity to recover after invasion. This, as we know, is a reversal of the order in which these two capacities have been evolved.

In reference to this difficulty, the question arises whether we are not still under some misconception as to the fundamental nature of the process by which "use acquirements" are brought about, and, as we shall see later, there are many strong reasons for concluding that the process of direct adaptation by "use acquirement" is itself the result of "variation and selection" among the physiologically differentiated parts of which the individual cell is composed, the result, in fact, of variation and selection on the intracellular scale.

However this may be, we must also remember that the recovery capacity, from the exercise of which immunity of the acquired kind results, is itself an innate, inherited character, which has arisen, like other congenital characters, during racial experience of disease.

There are some other isolated clinical facts bearing on the question of the duration of "acquired immunity," but they are not sufficiently understood or sufficiently co-ordinated to be of much service from our present point of view.

In conclusion, it is desirable to analyse critically our conception of "acquired immunity."

Do we regard the artificially-acquired immune state as a *progressive* change, a gain in some quality, a more perfect form of the capacity of successful resistance, or do we regard it as a *retrogressive* change, a loss of some quality or character which previously rendered the body cells susceptible to invasion by disease?

In terms of the side-chain theory, does "acquired

immunity" depend on an increased formation by the body cells of ambo-receptors which in the shed form fix, and neutralize the toxophore groups as soon as formed by the disease organisms in the blood stream, and so prevent infection on any considerable scale?

Or does "acquired immunity" depend on the loss of the already formed amboceptors, and the absence of any regeneration on the part of the body cells of those amboceptors which originally served as nutri-receptors, but which have been made use of by the haptophore group of the disease organism to anchor the toxins to the body cells, and which, therefore, only serve under the altered conditions to render the body cells vulnerable or susceptible to the disease organisms?

Or does "acquired immunity" depend on both these conditions? That is to say, does the exercise of the capacity of recovery result in the increased formation of amboceptors, which, when shed, are capable of directly neutralizing the toxins immediately they are formed, together with the cessation of any further regeneration of the same susceptible kind in the persistently sessile form?

There are still some facts which suggest that even this conception of "acquired immunity" as a double adaptation, the result of both "progressive" and "retrogressive" changes, is still imperfect, if it is limited to one group of cells—the defensive cell group.

In the first place it seems very probable that all the cells in the individual organism are concerned in the immunity response.

Though certain types of cells or cell groups have become, through evolution, more fully adapted than other cells to respond to the attacks of disease organisms and their secretions, and though it is upon these cells that the brunt of the attack falls, yet all the other cells, even the highly specialized nerve cells, are drawn into the struggle in certain circumstances, owing to their affinities for nutrient material of complex proteid composition analogous to that which form the secretions of disease organisms.

Thus we are led to regard "acquired immunity" as that adaptive change in the body cells and body fluids of any organisms which results from the exercise by some or all of the cells of the organism of a capacity of successful response to the activities of certain disease organisms.

The completeness and the persistence of the immune state so acquired bears a direct relationship to the number and kind of the body cells which have exercised this capacity of successful response, and the completeness with which the response has been made by those cells, and the fullness with which the characters so acquired have been transmitted to the cell descendants of the same cells.

Absolute and persistent immunity, therefore, means the possession on the part of all the body cells of efficient means of defence or the absence of susceptibilities permitting attack, or of a combination of both these characters. In many, probably in most, individual organisms in relation to many, probably to most, kinds of disease organisms, this state of complete adaptation does not exist in all the body cells at one and the same time in one and the same individual organism.

Finally, we conclude that the condition of "acquired immunity" so brought about is in some cases and in some diseases the result of direct adaptation on the part of the body cells exposed to changed conditions. It is the result of a process of "variation and selection" of an *intra*cellular kind. In other cases it is represented by adaptation of an indirect kind on the part of the body cells exposed to environmental change, the result of a process of "variation and selection" of an *inter*cellular kind.

Or it may be due to a combination of both these factors.

It is, indeed, possible to differentiate somewhat more closely diseases against which it is possible to acquire immunity on the one hand and diseases to which adaptation can only be brought about by natural immunity during racial experience on the other.

Reid[4] has shown that, speaking generally, the diseases to which adaptation is brought about by acquired immunity after individual experience are diseases like small-pox or measles, which are characterized by acute infection, due to extracellular toxins (exotoxins) secreted by the disease organisms into the blood stream. While the diseases in regard to which acquired immunity is impossible or difficult, and to which adaptation is brought about by natural immunity evolved during racial experience, are the more chronic infections, like tuberculosis and leprosy, in which the disease organisms do not secrete exotoxins in any quantity, while between these two extreme groups there are numerous diseases of an intermediate type in regard to which adaptation is brought about by both kinds of immunity, natural and acquired.

It is interesting therefore, to find that, approaching the subject of acquired immunity from another side, we have already reached the conclusion that the artificially acquired immune state which follows individual recovery from disease is partly the result of direct adaptation by use acquirement, and partly the result of indirect adaptation by innate variation among body cells.

Moreover, we found that it was in the chronic infections, like tuberculosis, characterized by destruction and regeneration amongst the body cells, that intercellular variation and selection occurred, and that adaptation was largely indirect.

While it was chiefly in the acute infections, like small-pox and scarlet fever, in which exotoxins were secreted by the disease organisms and antitoxins and antibodies were elaborated by the defensive body cells, and in which the evidence of cell destruction was less marked, that adaptation was chiefly direct and variation and selection of the intracellular kind.

This means, speaking broadly, that the antitoxin side of the immunity reaction represents the individual use acquirement, or *direct* form of adaptation, and the intracellular phase of variation and selection, while the phagocytic side of the immunity response represents the racial or innate and *indirect* form of adaptation and the intercellular phase of variation and selection.

It means, further, that, as we have already seen, the immune state is the result of one kind of adaptation in one group of diseases, and of another kind of adaptation in another group, and of both kinds of adaptation combined in a third group.

Natural Immunity.

We must now consider that form of resistance to disease known as natural immunity, and compare, from the adaptational point of view, the conditions under which it occurs with those under which "acquired immunity" exists.

In the first place, "natural immunity," unlike the "acquired" form, does not depend on the previous exercise of any capacity of recovery by the immune individual. It is an innate character, and arises through the selection of more resistant individuals during racial experience of disease, and, like all *innate* as opposed to *acquired* characters, it is transmitted from parent to offspring.

But while these are the conditions under which "natural immunity" occurs in the ordinary way, there are certain further facts which are of interest from our present point of view.

It is well recognized that the line which separates the "naturally immune" species or variety of animals from the "non-immune" species or variety is a very narrow and apparently an arbitrary one.

For instance, albino rats are said to be immune to anthrax; whether this be entirely so or not, it is probably true that albino rats present a greater immunity against anthrax infection than wild rats. Now the essential difference between albino rats and wild rats is one of pigment. The whole question of pigmentation in reference to immunity requires further investigation. It is, however, difficult to understand how the absence of pigment in the body cells of any animal can be associated with an increased capacity of resistance to disease, or how the presence of pigment can assist the anthrax bacilli, or hamper the defensive cells in the disease response in such animals. Moreover, in the cancer reaction we find, on the other hand, the absence of pigment in the rat associated with increased susceptibility to cancer implantation. Thus Loeb found that he could grow sarcoma of a certain strain in albino rats, but not in ordinary rats (quoted by Gould in the Bradshaw Lecture),

If we regard "natural immunity," like "acquired immunity," as a state of adaptation brought about in different cases by a progressive variation, or a retrogressive variation, or by a combination of progressive characters of increased resistance with retrogressive characters of

diminished susceptibility of all body cells or of some kinds of them, then this peculiar association becomes more intelligible. Immunity to anthrax would then in the albino rat be a recessive variation, and would be associated with other characters of a recessive kind in the same animal.

In order to conceive of "natural immunity" as entirely due in any individual organism to entire absence of susceptibility to invasion, we must regard the body cells of such immune individuals as destitute of all receptors, all molecular cell groups of a kind susceptible to attack on the part of disease organisms and their toxins, both toxophore and haptophore groups. We must, in fact, regard the cells as destitute of all characters by means of which disease organisms are enabled to establish relations with them. Their nutri-receptors must be incapable of affording anchorage to the toxins of such organisms.

Having no vulnerable points, if disease organisms do gain entrance into the body, they can excite no reaction, and are treated as inert material or as food.

Such an example of "natural immunity" of the negative kind is afforded by the marsh turtle in regard to anthrax. This animal is naturally quite immune to the anthrax bacilli and its toxins, and seems to be quite unaffected by the injection of large doses of the poison into the body. Moreover, as the result of such treatment no antibodies and no antitoxins are found in the blood or body fluids.[1]

The alligator, on the other hand, affords an example of "natural immunity" of the positive kind, in which the artificial introduction of anthrax bacilli is followed by the plentiful production of antibodies in the blood serum.

Such a negative form of "natural immunity" as that afforded by the marsh turtle would be paralleled in "acquired immunity" by those typhoid carriers, of which apparently a few are recorded, in which the typhoid bacillus can be demonstrated, but who give no Widal reaction.[2]

A "natural immunity," an insusceptibility of this kind really means an absence of established relationship, or rather the impossibility of establishing relationships between the body cells and the disease organisms to which the cells are insusceptible. In such circumstances there is no evidence of any reaction or defensive response by the body cells as the result of the introduction into the body of the disease organisms by natural or artificial means. It is either an immunity which precedes racial experience of disease, or it is the final stage of perfected natural immunity of the positive kind.

This conception of "natural immunity" under certain limited conditions as a negative state, a loss of susceptibility, derives some support from certain facts known about the responses made by organisms to food material and non-protein chemical substances.

Certain individuals and some species of animals are naturally immune to, that is, insusceptible to, the poisonous action of articles of food, alkaloids, and other substances. Thus the rabbit is insusceptible to belladonna, a chemical substance poisonous to other species of rodents. The entrance of this material into the body of the insusceptible animal is not followed by any symptoms of reaction. It is simply dissociated, and assimilated, or excreted by the body cells in the same way that ordinary food material is dealt with.

The presumption is, therefore, that if "natural immunity" under certain circumstances may be represented as a negative state, "acquired immunity" may be so represented also. But however large and important, or however small and unimportant, the part played by "natural immunity" of this negative kind in the disease response either in man or the lower animals, there can be no doubt as to the importance of the part played by "natural immunity" of the opposite or "*positive kind.*"

This kind of natural immunity succeeds racial experience of disease out of which it arises, just as acquired immunity results from individual experience of disease.

It consists, as before outlined, in a perfected form of the recovery response, established during racial experience of disease, in which the body cells or the special defensive cells, or body fluids, or both, immediately respond in an adequate manner, and without the necessity for any preliminary training or reinforcement, to any attempt on the part of the disease organisms to invade the tissues. Unlike the negative form of "natural immunity" the positive form is an adaptation of a progressive kind. It is due to the increased perfection of an old or the acquisition of a new character. Moreover it *succeeds* and does not *precede* racial experience of disease.

The greater number of examples (both in the human and other species of animals) of natural immunity to disease organisms and their toxins appear to be of this positive kind.

For instance, individuals belonging to immune races, and themselves naturally more or less immune to the tubercle bacillus, show a high opsonic index, that is to say, a high defensive capacity on the part of their defensive cells in relation to the tuberculous organism when inoculated with its toxins.

In many cases of natural immunity to different species of disease organisms in the lower animals the formation of antibodies and antitoxins in the blood in response to inoculation by the disease organisms or their toxins to which such animals are naturally immune, strongly suggests that the immune state is the outcome of an adequately adapted defensive machinery existing in the body cells of such animals. Interesting facts confirmatory of the view that "natural immunity" of this kind is a progressive adaptation, a state of more perfect defence, are derived from a study of the allied haemolytic and cytolytic reactions observed in such naturally immune animals.

Lastly, it is quite possible that "natural immunity" in some cases and under certain conditions may be due to a combination of the negative and positive forms. It may arise during the process of adaptive evolution against disease as a *progressive* change in one way, and a *retrogressive* change in another way; as a *gain* of a character in one direction and the *loss* of a character in another direction; as an *increase in defensive* capacity in some cells and a *diminution in susceptibility* in other cells.

Nor is this division of "natural immunity" into two kinds merely a matter of superficial interest. It assumes additional interest when regarded from the hereditary and evolutional point of view. Thus regarded it becomes evident that the *positive* must have succeeded the *negative* form in the history of any species.

If, finally, we regard the "naturally immune" state as a whole, irrespective of any artificial division into kinds or varieties, and irrespective, also, of the different ways in which the different varieties may have originated, we find certain features for the most part the opposite of those found in the "acquired form."

Unlike "acquired immunity," *natural immunity* is transmitted from parent to offspring. It is almost invariably, under normal conditions at any rate, lifelong in duration, and so does not exhibit that variability in persistence which is characteristic of the acquired form.

From our present point of view the most important point about natural immunity is that it represents an *innate congenital* character or capacity. It arises during the growth of the individual, like other congenital characters, in response to the stimulus of nutrition, and independently of any individual experience of disease.

About this there can be no doubt, with the exception perhaps of the extreme negative variety which represents an entire absence of both individual and racial experience of disease, the naturally immune state is an adaptive state, the outcome of the selection of more resistant individuals during racial experience of disease.

Recapitulation.

Having considered "natural" and "acquired" immunity, and having examined and compared the conditions under which they respectively occur, we are now in a position to ask the final questions which it is the object of this inquiry to attempt to answer:

1. Is "acquired immunity" the outcome of *use acquirement* or of *innate variation?*
2. What is the fundamental nature of a "use acquirement"?
3. Does it originate in a biological process essentially different from that by which innate characters arise, and, if so, in what essentials do the two processes differ?

It will be convenient, in the first place, to consider the resemblance in the conditions under which "use acquirements" and "innate characters" originate.

In both cases the new characters arise during the gradual process of cell growth away from, rather than in

the direction of, the hereditary cell tendency. In both cases they arise from the interaction of two factors—*environmental change* on the one hand, and *cell potentiality* on the other.

All cellular variation must ultimately be explained in terms of interaction between outer and inner forces. But while in use acquirement the new character, the new variation is a reaction to the *use* factor in the environmental stimuli, and has the appearance of being a "direct" response, in spontaneous or innate variation the new character so arising is a reaction to the *nutritional* factor in the environmental stimuli, and has the appearance of being an "indirect" response.

Further, the study of the immunity and disease response has shown us that when the use and nutritional factors are combined in one and the same environmental stimulus, as in the case of the response made by the defensive cells to disease organisms and their toxins, then the new acquirements, or the new variations, whichever way we describe them, tend to arise as "direct" adaptations to the environmental change.

This fact suggests that, after all, although they differ as to the conditions under which they occur, the processes of adaptation by "use acquirement" on the one hand, and by "innate or spontaneous variation" on the other, are not two essentially different processes, but one and the same, taking place among cell parts in the one case and among individual cells in the other.

Thus, in the response made by the neuron to any change in the stimuli of sound, light, heat, contact, or any of those vibrations which constitute the various kinds of nerve stimuli, we encounter the process of "use acquirement" in the most highly developed form. Not only are the two factors, use and nutritional stimuli, widely differentiated in the environmental influence to which the nerve cell is exposed, but the response made by the nerve cell to the stimulus is widely and definitely differentiated in regard to these same two component factors also. For the neuron responds to the most delicate alterations in the use stimulus, while the nutritional stimuli, which reach it at the same time, remain constant or may vary in a contrary direction. Moreover, as a consequence of this differentiation and highly organized condition, the nerve cell has lost the power, at any rate, in adult life, in the fully developed form, to undergo cell division and therefore to transmit to cell descendants the acquirements which it has made.

Unlike the process by which adaptational change is brought about among other kinds of cells, and unicellular organisms, and to a certain extent also among the defensive cells, a process characterized by intercellular struggle for existence, cell destruction, and cell regeneration, and cell variation; the process of "use acquirement" by which a nerve cell becomes adapted to changes in the nerve cell environment is characterized by an absence of any struggle for existence, or of any injury or destruction to nerve cells, or of any regeneration of nerve cells, but it is characterized by changes of an intracellular kind, by new combinations in molecular groups, and by the discarding of less fit molecular groupings, and by the waning and waxing of Nissl bodies.

Both processes are alike in this, that they are due to variation and selection among units exposed to change, but in innate variation the "variation and selection" concern individual cells, while in "use acquirement" they are intracellular, and concern cell parts.

In the intercellular form the possibility of variation among cells as individual units is closely dependent on the degree of organization of the cells concerned. The more highly specialized and differentiated nerve cells are incapable of varying among themselves, since they are incapable of cell division, while the less highly organized phagocytes or disease organisms would seem to be capable during cell proliferation of innate variation.

In the intracellular form of adaptive response and variation we find the same conditions, for while the nerve cell as a whole is a highly specialized cell, the cytoplasmic substance of which the young and adaptable nerve cell is composed is highly labile and capable of much molecular change and rearrangement.

In both cases alike the modified capacities and the altered activities are due to the influence of environmental stimuli acting on hereditary potentiality, in one case of the cell regarded as a unit, in the other case of the physiologically differentiated molecular biophores of which the cell is composed.

If we are right in thus regarding a "use acquirement" as a process of variation and selection in an intracellular form we should expect that any character so originating would be transmitted to cell descendants, just as the new characters which arise as the outcome of intercellular variation are so transmitted, and such, indeed, we find to be the case.

Whenever a new character arises in any cell as a "use acquirement"—that is, as a variation of a qualitative or quantitative kind during growth of physiologically differentiated cell parts—it is transmitted in cell division to the cell descendants of that cell. The facts concerning "acquired immunity" illustrate this point very fully. The acquirements made by the defensive cells during the exercise of the capacity of recovery are transmitted to the cell descendants of the defensive cells.

We also see the reason why acquirements made by the body cells of the individual are not transmitted to offspring, for only those variations which occur in or (since the process of origin is the same) only those acquirements which are made by the germ cells themselves are transmitted to germ cell descendants—that is, to new individuals. Acquirements made by body cells are only transmitted to the cell descendants of those body cells, and then only under definite conditions.

In fact, the transmission of new characters to cell descendants is so bound up with adaptation, and is of such vital importance to the welfare of the individual organism that it has itself come under the influence of natural selection and has come to possess selection value.

For instance, it has not apparently been to the interest of the individual that automatic and fixed modes of response acquired by nerve cells and the nervous system as a whole should persist indefinitely or be transmitted to nerve cell descendants. Hence the nerve cells have lost the power to multiply, and so do not transmit acquired characters.

It is not in the interest of the organism that muscular hypertrophies, the result of "use acquirements" should persist in the absence of the special stimulus which called them forth, hence "use acquirements" in the muscular system depend on a graduated exercise of a capacity of muscle cell division, in response to the use stimulus, and when the stimulus ceases to operate the muscle cells cease to divide.

In the response made by the defensive cells to disease organisms, on the other hand, it is to the interest of the organism that the capacity to resist disease should persist, hence the defensive cells transmit to their numerous cell descendants the new capacities which they themselves have acquired during the reaction to disease. And if in addition (as I think the evidence clearly shows) it is to the interest of the organism that the capacity to resist disease should persist in an economic form, that is in a form in which it can be immediately exercised without any necessity for a renewed exercise of the capacity of recovery, as it can be in the "acquired immunity" form, then we can understand how it has come about that this capacity to recover from infection has been converted into a capacity to resist invasion.

As to the change in character or form undergone by the capacity so converted, it may be due to changes in the defensive cells of a *progressive* kind, to a more perfect form of the recovery response in which a permanent machinery of defence is always ready, or it may be the outcome of a *retrogressive* change, a negative variation, a loss of susceptibility on the part of the body cells or some of them. In terms of the side-chain theory it may be due to a failure on the part of the defensive cells to reproduce susceptible receptors capable of affording anchorage to the haptophore and toxophore groups of the disease organisms.

It is very necessary to remember that the immune state and the capacity to recover are both adaptations, and that the whole disease response is an attempt at mutual adaptation on the part of two highly variable and extremely prolific kinds of organisms, the defensive cells and the disease organisms. In fact, the very life and death character of the struggle and the stringency of the selective process has placed a high selection value on both these capacities—Variability and Fertility.

But the different species—that is, the different morphological forms of the disease organisms—far outnumber the different kinds of the defensive cells; hence the same defensive cell must be adapted to and must be able to resist the attacks of many kinds of disease organisms. Hence it becomes necessary that the individual cell should obtain new defensive powers by "use acquirement"—that is, by varying "intracellularly" in response to environmental changes as well as by "intercellular" variation. Further, in view of the changing capacities and changing activities of the disease organisms, a moving equilibrium or equality of adaptation can only be maintained by losing vulnerability in some directions and gaining increased resisting powers in other directions on the part of the defensive cells and the disease organisms. We know that in the struggle between individual organisms adaptation has been brought about by retrogressive as well as progressive variations; in fact, in some cases the former have outnumbered the latter. It is probable, therefore, that retrogressive as well as progressive variation has occurred on both sides during the struggle between individual cells and cell parts.

It is probable, in fact, that the advantages—the increased adaptive capacities which have arisen as the result of variation amongst the disease organisms, and the increased adaptive capacities which have arisen in defensive cells as "use acquirements"—both equally owe their origin to progressive and retrogressive variations, in the one case largely in the intercellular, in the other case largely in the intracellular as well as the intercellular field.

As before indicated, the crucial difference between "innate variation" and "use acquirement," between "inter-" and "intra-" cellular selection is this: in the former the new characters do not arise in the individual cells exposed to the change, for, these being unable to make the adaptive response, perish, but in related cells which possess the more suitable capacities, and which therefore survive.

In the latter case, although the new characters arise in more fit physiologically differentiated cell parts the discarding of the older cell parts exposed to the environmental change does not necessitate the death of the cell as a whole.

But while they differ crucially in the kind of units which vary and which are selected, both processes are essentially alike, inasmuch as both depend on variation and selection.

The old question which Lamarck and Darwin set themselves to solve in the world of species still confronts us in the world of the individual organism. They were struck by the sharply accentuated discontinuity between species on the one hand, and they were troubled by transitional forms on the other. They asked the question, How does one specific character arise out of, merge into, and give rise to another specific character? Lamarck answered the question in one way, Darwin in another.

Modern bacteriological attitude to the evolutionary process as it affects the different varieties and different capacities of defensive cells is still in the Lamarckian stage, and the problem, moreover, is rendered even more obscure and more difficult by reason of the very fact that in the case of the body cell and the disease organism we are dealing with component parts of the individual organism, which are themselves unicellular organisms, and in such organisms the continuity between cytoplasm and nucleus is much more perfect than the continuity between body cells and germ cells in the multicellular organism.

Hence in unicellular organisms, such as the defensive cells, environmental change exercises through the cytoplasm a much more direct influence on nuclear activity. Hence variation assumes a more directly adaptive character. Hence, also, the greater difficulty in distinguishing between "innate variation" and variation due to "use acquirement." Hence the great probability that they are both a process of variation and selection—one *intercellular*, one *intracellular*—and the further probability that the one process has arisen out of the other.

But the analogy between the progress of evolutionary thought in the ontogenetic and phylogenetic field goes deeper still.

Confronted by the difficulties to be surmounted in accounting for "spontaneous" variation—that is, in associating germ-cell variation directly with somatic-cell variation, the result of environmental change—Weismann fell back on variation and selection among the different ids and determinants which he had already assumed in the germ cells, as forming the material basis of variation and hereditary transmission—that is, he fell back on variation and selection of an intracellular kind.

In like manner Ehrlich, confronted with the difficulty of accounting for direct adaptational response in defensive cells, has assumed the existence of a complex machinery of "receptors" in the defensive cells to explain the manner in which the immunity response to disease organisms is brought about.

There is therefore some precedent for going a step further and assuming, as we have now done, as a working hypothesis, a process of variation among the physiologically differentiated parts which compose the cell itself, together with a selection of the more favourable of the variations so occurring.

The result of the foregoing examination into the conditions under which acquired immunity occurs tends to show that the process by which the defensive cells acquire new characters and new capacities of offence and defence is a process of variation and selection, partly of an intercellular and partly of an intracellular kind.

It tends to suggest, in fact, that "use acquirement" is a form of adaptation to environmental change brought about by variation and selection among intracellular units instead of among individual cells.

References.

[1] Metchnikoff, *Immunity*. [2] Ledingham, Report to Local Government Board, 1910, p. 118. [3] Ehrlich, *Studies in Immunity*. [4] Reid, *Principles of Heredity*.

THE HULTON COLLIERY EXPLOSION.

BY

W. A. HATTON, M.D.Durh.,

SURGEON TO THE COLLIERY.

History of Events.

The explosion, lasting about a couple of seconds, produced a dull, heavy roar, distinctly heard four miles away, occurred on December 21st about 7.50 a.m., when the men had been working about an hour. I arrived about 8.20 a.m., and found the manager, Mr. A. Tonge, and the mechanical engineer and officials busily engaged in rescue work. Some colliery proprietors and Sir William Hulton, on whose land the pits are situated, were already on the scene, endeavouring to find out what was the matter, and anxious to give every assistance possible.

Drs. Blakemore and Russell, Leigh and Racker, were soon upon the scene, and we remained throughout the day attending to casualties. Medical men from all the surrounding districts were soon present and ready to render assistance.

The engine-house was prepared as an emergency station, while the Miners' Union room, lent by Mr. Roughley, was used as a temporary hospital under the charge of Dr. Mallett of Bolton Infirmary. Stretchers, splints, and surgical materials and blankets were supplied by the colliery officials. The Westhoughton district nurses, Nurses Gallimore, Jones, and Green, several nursing sisters of our ambulance division under Lady Superintendent Caldwell, together with ambulance carriages, were in attendance, so that the medical arrangements left nothing to be desired, and we were fully prepared to deal with any emergency. There were, in addition, a good number of well-trained ambulance men soon on the scene, who did good work on that and the succeeding days.

Hour after hour of anxiety was passed by the enormous crowd, uncertain as to the extent and consequences of the explosion, and doubts as to whether any would be found living became the current feeling, especially when the condition of the first casualty, brought up between 10 and 11, was seen—a youth, Gibson, aged 15. He was entirely nude, not a shred of clothing left on him. He was badly burnt all over, and thickly coated with coal dust. He was just alive, unconscious, and breathing spasmodically. There were no fractures or wounds; the hair was completely burnt off. He lived but a short time, death being due to the shock of the explosion.

He was soon followed by Fountain Byers, aged 33 who was about fifty yards from the Yard shaft (with several dead around him). He was badly burnt about the head, chest, back, body, arms, and legs, unconscious, covered with coal dust, and with a severe scalp wound on the back of the head. After attention he was removed to the Bolton Infirmary, where he died the following morning from shock due to his injuries. He was suffering from asphyxia, but with no definite symptoms of after-damp.

Following him were some dozen cases of men, more or less badly gassed, and presenting the usual symptoms—staggering gait, difficulty of breathing, dizziness, and maziness. They had all come from the Arley Mine. Most of the cases were treated in the engine-room, where they all recovered, artificial respiration in some cases having to be performed for some time.

Richard Clayton, a head fireman, was the next important case. He had gone to an air crossing in the Arley Mine to see that the ventilation was all right; he tumbled down and was found insensible, though there were no traces of any violent disturbance due to the explosion near him. Artificial respiration and every means of recovery were resorted to, without avail. On being brought to the surface a plug of tobacco was found lodged in his throat. It would be difficult to say whether it was the cause or the effect of death. He was certainly asphyxiated, which might very likely be caused by foul and impure air, of which a good deal had penetrated the Arley workings. Another unfortunate casualty was the death of William Turton, who was bravely engaged in rescue work in the Yard Mine (where the disaster occurred). A slight fire had broken out, and he and a companion, Stott, were sent to put it out; he dropped his lamp, and getting hold of Stott's he dropped that, saying "I am done for." Rescue men went down, and did what they could for him, but he never recovered. Death was due to asphyxia.

Both of these cases might have stood a better chance had they been hurried at once to fresh air. These were the only two unfortunate incidents occurring from beginning to end, apart from the effects of the explosion. Turton's death, sad as it was, may have been the means of saving several lives, as it showed the dangers lurking round and the need for caution.

One badly gassed case from the Arley—that of G. Partington—is interesting; in his own words:

> I was getting coal, when my light went out. I thought I would go and get it lit, but changed my mind, and waited for a few minutes, when I heard a great clap, and the air currents veered to and fro, and the air was thick with fog and mist and dust. Several of us went to G. Byers, a brother to Fountain (who lost his life), who was dazed and prostrate himself, and also gassed, and, as he wouldn't answer, lost their tempers with him. However, he rallied a bit, and told them to go round another way, as the fog was so thick you could cut it. Then I went mazy—my head swam—and I fell down; when I woke up I saw the doctors round me bringing me round.

Pneumonia commenced the next day; it ran the ordinary course, and terminated on the tenth day. For three days previously he was violently delirious—a condition noticed in several cases recorded by Dr. Shaw Lyttle in the Albion Colliery explosion as a result of after-damp. He made an uninterrupted recovery, except that he suffered from shock for a long time.

Another badly gassed case was that of Sharples, who was in the Arley Mine. He heard the roar, his lamp went out, and he was knocked down and remembers nothing more until he found himself in the Bolton Infirmary. There were no injuries, but symptoms of shock and asphyxia and unconsciousness. He recovered so well in the evening that he was on the point of being sent home, when he developed a severe attack of pneumonia, which ran the usual course. Davenport, the only injured man from the Yard Mine now living, had no recollection of anything—heard no roar, saw no flash. He was found partly in or near a manhole unconscious, severely burnt about the head and body, arms and left leg, his appearance as regards parts burnt exactly resembling that found on those who had lost their lives. The hair was all burnt off. He is making a good recovery, and undoubtedly owes his life to being near the manhole, where there was sufficient air to keep him going till he was found.

In addition to Clayton, Turton, and Gibson, three bodies were brought up the first day; death in each case resulted from explosion.

Gangs of rescue men, with latest rescue apparatus and electric lamps, in batches of six, worked heroically on that day, when required, and subsequently for four to six hours, in parts reeking with after-damp and other poisonous fumes and impeded by tremendous falls of roof, and it says much for good management and carefulness that subsequently there was not a single casualty or case of injury. This reflects the greatest credit on the leadership of Mr. Alfred Tonge, who worked heroically from the going down of the first cage till all the roadways were made safe, and till nearly every body was recovered. In addition to being partly gassed once or twice, he himself had an alarming experience on December 23rd, when, after sending a rescue party up—and he was all alone in that dreadful mortuary of nearly 350 bodies—his lamp went out, and he had to stumble about in the absolute dark through blocked up and confused passages, when twenty minutes seemed like twenty years. Fortunately, he eventually reached the shaft. I may mention, to show Mr. Tonge's interest in his men, that I showed him a few weeks back Dr. Elworthy's article in the JOURNAL on miners' nystagmus,[1] and he intended following out some of the suggestions. He was ably assisted by Mr. John Bullough, Mr. Llewellyn Williams, under-managers, firemen, workmen, and by a host of neighbouring colliery owners and experts, prominent among them being Messrs. Gerrard and Harrison and Roscamp, H.M. Inspectors of Mines, who, in addition to their official duties, ably assisted in the actual work of rescue.

I was asked to organize the many willing ambulance helpers, and had no difficulty, getting teams of twenty for day and twenty for night duty for over a week, about 500 in all. Their services were not needed for the living, so they cheerfully aided in the grim and, later on, unpleasant task of bearing the bodies to the mortuary and assisting in many other ways. They all did their duty well and cheerfully, and showed the great advantage of having skilled and trained ambulance men attached to every colliery district. Our nursing members assisted day and night in the mortuary in getting bandages and disinfectants ready, and made themselves useful in several ways. The ambulance men and nurses should be sent for in any great disaster at once; they should work under the orders of a recognized and authorized medical man, and he would be responsible for the entire charge of that department, their comfort and feeding, the drawing up of a time table, and the prevention of overlapping. We had a few boy scouts, who were exceedingly useful, carrying messages to and fro. They served a very necessary part.

A good photographer should be at hand to assist in the work of identification. After the first four days or a week the features become indistinct, and later on absolutely unrecognizable, and identification is only possible by bits of clothing, clogs, and other property and articles.

Two mortuaries were available, the first for washing and laying out bodies, and the other where they awaited identification. There was a good supply of buckets of hot and cold water, sawdust, carbolic soap and disinfectants, and cloths and linen, and india-rubber gloves for all touching the bodies. Though nearly 350 bodies were carried, undressed, and washed up to the end of six weeks after the explosion, not a single case of blood poisoning or other illness occurred, notwithstanding the advanced state of decomposition in which a good many of them were.

And, lastly, I would like to add a word for the numerous bands of medical men from all the surrounding districts, leaving their own private work day after day, anxious to help their fellow-men, and placing their talents and knowledge just where they might be useful, and emulating the quiet and modest heroism of medical men in every previous colliery disaster, among whom Dr. Morris of Tylorstown, Dr. Turner of Darran, and Dr. Harris at Whitehaven are shining examples, often risking their lives in rescue work. Four among us went down into the dangerous workings on the call of duty on this occasion, and relays of medical men every twelve hours for three weeks put their names down for duty till the work was done.

A suggestion occurs to me: where so many human lives are at stake, and so many medical considerations, respecting expert treatment, pathology, and medical assistance

in tracing the cause and other considerations of the explosion, as shown by the causes of death in various groups of men, in various districts, and the position in which they are found, a medical expert from some neighbouring university would be of good assistance to H.M. Inspector of Mines and the local medical men, and should be appointed.

Statistical Summary.

Number of bodies recovered to February 16th	343
Causes of Death:	
Carbon monoxide	224
Explosion	53
Explosion and CO	63
Asphyxia	2
Unstated (probably explosion and CO)	3
Died in infirmary (shock and burns)	1
Bodies charred and scorched by flame	92
Bodies uninjured	312
Bodies injured by violence (including those under falls)	31
Bodies unidentified	19

Deaths by Violence.

Of the 343 cases, this was the cause of death in 53, or 15 per cent.; violence with evidences of carbon monoxide poisoning in 116, or 34 per cent. To those exposed to the full blast of the explosion death must have been instantaneous; they would be immediately stunned and rendered unconscious, and found where they fell. One man had died in the act of eating a meal of bread; several with hands raised as if getting coal. The blast on haulage roads was very severe, but at some of the faces the men had had a little warning and were able to proceed a short distance.

In 312 of the 343 cases there was no disfigurement. The features were peaceful and placid as if sleeping peacefully, and the limbs in repose; in no body examined was there any expression of agony or pain. In all these cases the bodies were thickly and uniformly coated all over with coal dust from head to foot, which was easily washed off, and which had probably fallen on them at the time of, and after, death, and had also penetrated the air passages, nostrils, etc. Examined in some few cases under a lens, no evidence was seen of it being coked or fused, as was noticed on the pit props and timber. From the uniform layer there was no evidence of the track of the explosion or flame. In some bodies there was a thick covering of grit and flakes of coal between the clothing and the skin. In no single instance was there any coal driven into the body. I examined a few cases to see if the drum of the ears had been damaged, but failed to find any instance.

Thirty-one bodies showed evidences of injuries, more or less extensive. There were fractures of face and jaw in 4, of the skull in 10, of the ribs and sternum in 12, of the thigh and leg in 8, of the upper limbs in 6. Limbs were torn off bodily at the joints in about 20 cases. There were several dislocations, chiefly shoulder and ankle. I did not see any sign of extensive haemorrhage in any of these cases. One man was hit by a violently hurled missile which had severed the blood vessels of the neck, from which he had bled profusely, though probably he did not survive the force and sudden shock of the explosion. In some 10 cases the injuries were extremely severe; in 4 nearly every limb was fractured, the skull torn off, brain absent, and chest and abdomen laid open; in 1 case the liver and heart were laid upon the ribs; 1 man was blown bodily about forty yards, and then fell another 135; 3 found blown down the sump hole were youths engaged in haulage work within fifteen yards of the pit shaft.

It may be of interest to inquire how sudden shock causes death. Cases of sudden death without any mark on the body are numerous in works on forensic medicine, and are sometimes difficult to explain even on the hypothesis of violence without mark; of such we had in this instance about 22 cases. Death may occur naturally suddenly as well as slowly (F. J. Smith). Many instances are recorded of sudden death by fear alone, lightning, fear of operation, fancied snakebite (Neale), great mental emotion, or fright;[2] in diseases, instances are common in angina, heart and other organic disease, status lymphaticus; in poisons, as in prussic acid and cyanide poisoning, the cause probably being sudden paralysis of the nerve centres controlling brain or heart primarily. Savory suggests that "death from shock is nothing more than temporary exhaustion of nerve force, the result of a violent sudden excessive expenditure of it."

The sudden impact of a huge volume of air travelling at a rapid rate would knock a man down senseless (Haldane), and when we consider the evidences of the tremendous explosive force in every direction in this disaster, the huge falls resembling hills some 200 yards in length and weighing thousands of tons, the smashing up into fragments of a huge fan weighing some four tons, and also the heavy haulage wheels, the smashed tubs, together with the extensive injuries seen in some of the bodies, it is not difficult to understand that the explosion itself, without considering the great onrush of preceding air and subsequent developing by after-damp, would kill instantly all where they stood; human beings would be like a leaf or a straw in a violent hurricane. The suddenness and completeness of this explosion in practically every part of the workings—the longest diameters of which were $1{,}920 \times 1{,}750$ yards, separated in the centre by the pit shaft—and its apparent simultaneousness are appalling.

Burning.

Of the 343 bodies, 92 were burnt or scorched. This must have occurred either at the time of the explosion or immediately after it. It was very extensive and marked, but in all cases save two superficial; the flame must have been intense and of not long duration, leaving huge volumes of carbon monoxide in its wake, which, with the temporary absence of oxygen, would probably put out fire and stop any further burning. The hair was burnt to within half an inch of the scalp in all cases except two, where it was completely burnt away, and there was charring of the skull; the eyebrows, eyelashes, and the hair on backs of forearms and chest were burnt away and scorched, and in many places on the upper part of the body and upper limbs the skin was hanging off like scorched rags; the hair and skin of the lower limbs was untouched even where bare, showing unmistakably that the course of the flame was along the upper and not the lower part of the galleries. In many cases clothing round the chest and mufflers round the neck were burnt; straps round the neck, used by drawers to hang their lamps on, so as to leave their hands free for pushing their tubs, were in two cases burnt, but very rarely was the clothing on the lower limbs, trousers, drawers, stockings, or clogs burnt at all. In three cases not a stitch of clothing was left on the bodies, as in the first body brought up; this can only be accounted for as due to the extreme violence. In deaths by lightning the body is sometimes stripped of its clothing. That the clothes were not burnt away is proved by the fact that the bodies were not more charred. In one case only was the body badly and deeply burnt, one leg being burnt to a cinder. In one case only was there any evidence of burning before death—a large blister round the neck, together with some surrounding congestion, which might have been caused by a piece of burning coal or wood; neither the clothing nor moustache was burnt; there was marked evidence of CO poisoning, which must have been the cause of death.

In no instance was death due to burning, and only in one case was there any evidence that it caused suffering; in this the clothing had caught alight; the man had taken off his clogs so as to take off his trousers, which were found in a heap of ashes; his body was found about fifty yards further on.

Whether the body was burnt or not seemed to have no influence on the rate of subsequent decomposition.

Cases of Carbon Monoxide Poisoning.

Carbon monoxide poisoning accounted for 287 deaths, or 81 per cent. In 224 cases CO alone had caused death; those with signs of explosive force also numbered 63; this tallies with the latest estimates that CO accounts for 80 to 90 per cent. of all deaths in the majority of colliery explosions. Probably to the 287 cases may be added a few more, for CO was probably the cause of death in those unstated, and several of the bodies brought up early showing signs of violence.

After Dr. Haldane's complete and classical report on the Tylorstown explosion, 1896, unfortunately now out of print, containing an exhaustive analysis repeatedly confirmed by all subsequent observers, there is nothing to be added to the description of CO poisoning. We had here

343 deaths, a larger number than in any previous colliery explosion since that at Barnsley in 1866, yet nothing can be added to the description of the *post-mortem* signs. The dark carmine-red tinge could be found everywhere when looked for; at the first glance it was most noticeable on the cheeks and down the lower limbs; on more careful examination it was seen on the tongue, lips, and mucous membranes everywhere, owing to the thinness of the skin; where the epidermis had peeled off, as in the palms, or the nails of hands or feet had got loosened from heat or decomposition, the bright redness was very marked. It was just as noticeable in bodies brought up at the end of eight weeks as in the first week; it would be interesting to know how long it would be evident—probably till the blood cells became absolutely disintegrated.

The dry and yellow parchment-like skin on legs and arms was very noticeable, and in most cases decomposition was markedly delayed. The last body brought up on February 14th—just eight weeks after the explosion—was in a good state of preservation, not at all decomposed, and the evidence of CO poisoning perfectly plain.

All bodies were of the same uniform tint and were evidently saturated with CO; in many cases the dull red colour could be discerned beneath the coating of grime and before the bodies were washed. We had no opportunity of testing any treatment for CO poisoning, as not one man lived, but in his paper on the Darran explosion, 1909, Dr. Llewellyn has ably summed up the treatment for this condition.[8] To one point that he and other observers emphasize our experience also directs attention, and that is, all "gassed" cases must be brought to fresh air at once; no attempt at artificial respiration is of any use in vitiated or poisoned air, or any air not absolutely fresh, even if non-poisonous. It is just possible that Clayton and Turton might have been brought round had they been brought out to fresh air at once. Another essential point is to keep the patient as warm as possible. "Several cases collapsed more than once after coming round, and were quickly revived by warmth."

Poisoning by CO is a very merciful death; there is no pain or distress; the person simply feels tired and sits down. Dr. Turner, the medical hero of the Darran disaster, who was decorated by the late King for his noble rescue work, "had no symptoms until he exerted himself in trying to rouse his companions, he then felt tired, wanted to lie down, falling down several times, and finally losing consciousness."

An interesting point is that though it forms so stable a combination with haemoglobin, blood may be freed of its CO both by oxygen and also by fresh air; artificial respiration should therefore always be well and persistently tried whenever there is any chance of success. Of the various methods, Schäfer's is probably the best. I noticed that in four cases that died from carbon monoxide poisoning, and in which the intestines were exposed, they did not present the usual and easily discerned carmine-red, probably for the reason just mentioned.

In none of our cases was there evidence of carbon dioxide or other asphyxiating gases producing cyanosis and congestion.

It is interesting to note that though of the 343 victims a great many probably died instantly by the tremendous explosive force, immediately followed by huge volumes of after-damp, there are evidences that a great many were not killed instantly, though probably none of them lived more than ten to twenty minutes. In their cases there were no signs of suffering beyond the mental anxiety, no marks of abrasions or injury by hurry or panic, no handkerchiefs over mouths. For some cause or other the explosion did not kill them, but they would certainly hear the report, their lights would be put out, and they would proceed in the darkness with great difficulty towards the pit shaft, when the oncoming after-damp overtook them. They were all found to have been killed by carbon monoxide, few were injured, though one of them was badly scorched. Roberts was found killed by CO, with his clothes in his hand, endeavouring to escape. One other case also had walked a short distance—the man already recorded, who had shed his burning clothing. Of all who had gone down the Yard Mine that ill-fated morning only Staveley and Davenport are alive.

THE RESCUE WORK.

Several members of the Committee of the Howe Bridge Rescue Station were quickly on the spot, and Mr. Arthur Ellis, the secretary, at once took over the organization of the rescue work, and arranged the sequence of the descent of the teams. Everything went off without a hitch. There were no casualties among the many hundreds of rescue men, although they were continually plunging into danger, and their work was most arduous owing to the numerous falls and tremendous damage everywhere.

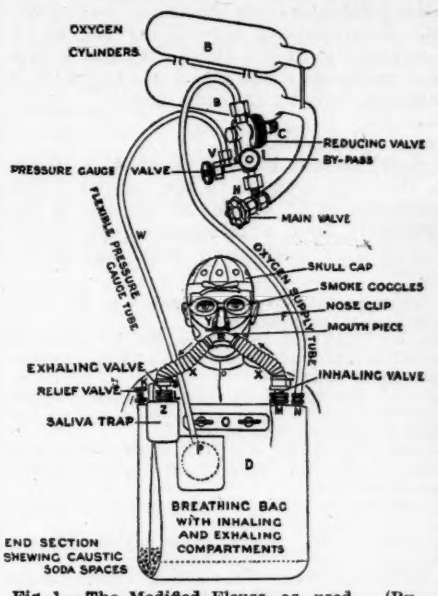

Fig. 1.—The Modified Fleuss, as used. (By courtesy of Sergeant-Major Hill.)

The apparatus used was the Fleuss, the design of which has been much improved by the Howe Bridge Committee, with the assistance of Sergeant-Major Hill and the makers. Dr. Arnold Greene, Medical Officer of the Rescue Station, writes to me as follows:

Every man trained has to pass through my hands as being medically sound. I pay special attention to certain points which in my opinion are essential to oxygen breathing and the apparatus.

As regards the accident itself, we had some 150 local rescue men at work, and during the whole time I was there I never had an accident of any sort brought to my notice as regards the rescue men. All the men I examined, both at the time of the disaster and subsequently, showed no signs of the hard work they had undergone, not only as regards the oxygen breathing, but as regards their physical condition. It was a severe test for oxygen breathing, but everything came out all right, and only proves that oxygen breathing in the way we use it does no harm to the men.

Fig. 2.

Mr. Gerrard, in his evidence, said that he desired to remark how well owners, managers, and officials of the mines, and workmen came forward and offered and gave their services night after night, and day after day, without hope of reward. He could not call to mind such a rapid recovery of a mine. In one day 123 bodies were brought out, and in five days 270. The men worked splendidly. They had to carry rapidly decomposing bodies under their noses, pushing them and hauling them over falls, "and sometimes they were their brothers." He continued as follows:

Next I must allude to the work done by rescue teams—the men with the breathing apparatus. We have one of the finest stations in the country established at Howe Bridge by the coal-owners of Lancashire and Cheshire, and we have got one of the finest men that could possibly be obtained as instructor in charge of that station, and he, Sergeant-Major Hill, arrived at this mine at 9.10 a.m. Immediately he was followed by Mr. C. Fletcher, one of the owners of Fletcher and Burrows, himself a trained and qualified user of the apparatus, and by others. By 11 a.m. there were forty men on the spot ready to do anything in the way of rescue work with their apparatus, and during the day eighty altogether arrived. It should be noted that they came from Burnley, Accrington, Rishton, St. Helens, Leigh, and Bickershaw, and distant places, and they were here day after

day and night after night, with an established rota, waiting their turn to go into the mine.

Mr. Gerrard gave instances of their admirable and courageous work. On one occasion they went 100 yards in foul air, and they recovered a body 40 yards in the deadly fumes. Poor Eccleston's body lay day after day, 36 yards in gas, and it was fetched out of the place by the men with the breathing apparatus.

To recover the bodies lying in after-damp a small apparatus called the "Salvator" (on the same lines as the Fleuss) was used. It consists of a breathing bag and a small cylinder of oxygen; it weighs about 7 lb., and lasts a man travelling at a moderate speed about two hours; it is also extremely useful in reviving anybody gassed.

CONCLUSION.

After thirteen days' patient hearing of about a dozen expert witnesses, the jury brought in the verdict "that the explosion was caused by an accidental ignition of gas and coal dust, probably from a defective or overheated lamp." The views of the experts were varied, and hardly any two agreed.

Professor Galloway suggested that it originated at No. 1 jig, North Plodder, from an electric sparking.

Mr. Alfred Henshaw: That it started above the jig wheel in No. 1 jig from a defective lamp, one being found with a broken ring, leaving a space below the glass.

Mr. A. H. Lush: At the top of No. 2 jig, North Plodder district, where there were evidences of great force, and all the men were found dead at their places and burnt.

Mr. Jesse Wallwork: No. 2 jig, North Plodder, owing to a damaged lamp igniting gas, the explosion traversing all the workings by means of coal dust.

Dr. Thornton (Newcastle) thought it highly probable that it started at the conveyor switch.

Sir Henry Hall, after a very careful examination: That it originated from gas in the Three-quarter Seam.

Mr. Gerrard (H.M. Inspector) and Dr. Cadman expressed the opinion that it originated from the burnt lamp found in the North Plodder, No. 1 jig (86). It showed signs of overheating, and the meshes of the gauge had very fine coal dust; it was near the conveyor face, where there would be a good deal of inflammable coal dust, together with some gas. Evidently the jury accepted this as the most probable explanation.

It is of importance, in an endeavour to trace the cause of the disaster, to know which bodies had been subjected to flame and, if possible, the cause of it. The mine (see plan) is divided into five districts—the North Plodder, South Plodder, Three-quarters, Top Yard, Downbrow Yard; the last had a subdivision—the East Jig. Of the 345 persons who descended the mine on December 21st only two now survive; one (Davenport) was found in a recess or manhole by the side of the Downbrow, leading to the Downbrow Yard, near body 190. The other (Staveley) was found in a pump-room place near No. 4 Shaft, but, strange to relate, his companion lost his life by CO, owing to his being slightly in advance of Staveley, the CO clearing off quickly, by proximity to the shaft.

Those in the Three-quarters, the Top Yard, the Downbrow Yard, and the subsidiary district, the East Jig, were in great part subject to CO; those in the South Plodder were largely killed by CO, a few having received burns and violence. In the North Plodder the greater number had received burns and were subjected to violence, although a number died from CO. Around the shafts all had died from violence, and were burnt. In the North Plodder at the No. 1 conveyor face near the conveyor, three bodies (87, 88, 89) were found, where they had been working, on the east side; whilst on the west side bodies were found apparently fleeing from the conveyor. These facts led to the supposition advanced by some that the origin of the disaster was at or near the mechanical conveyor on the No. 1 North Plodder face.

It was in the Downbrow Yard district that the men were found to have walked the greatest distances from their working places. From the northern side of this district thirty persons (192 to 221) had travelled 260 yards, and to within 300 yards of the shaft; these were found in a group, some in a sitting, some in a lying position, some had got inside wagons which had been blown on to their side or upended. In appearance all these were as if they had fallen asleep; they had travelled without light to this point, where the foul after-damp prevented their going further; possibly they were waiting for the atmosphere to clear when they succumbed to CO. Other groups were found in similar poses, not having been able to travel so far (222 to 239). At two or three other places in this district—notably in Nos. 2 and 3 jigs—were similar groups, having travelled some distance from their working places. Also in the Top Yard district were found several groups, having travelled some distance.

In the East Jig subdistrict—to a less extent, perhaps—the men had warning, and were able to leave their working places. In these districts it was unanimously agreed that the explosive force and the burning coal-dust had travelled inbye along the haulage roads. In the Three-quarters district also almost all the men had left their working places and were found in the roadways.

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TWO CASES OF SEVERE INJURY NEAR THE KNEE.

BY RUSHTON PARKER, M.B., B.S., F.R.C.S.,

PROFESSOR OF SURGERY IN THE UNIVERSITY OF LIVERPOOL.

I.—*Hospital Gangrene: Condition Twenty Years After.*

A MAN, aged 33, was injured on April 17th, 1890, by the fall of a large iron plate, extensively wounding his left thigh above the front of the knee. He was brought to the Liverpool Royal Infirmary, and was attended to by the house-surgeon, who put in stitches and dressed the wound.

The temperature rose on the second and third days to nearly 102°, and on the fourth to close upon 104°; by this time the skin around the wound had become deep red, and the region swollen and painful. Under an anaesthetic the stitches were removed by Mr. Parker, the wound explored, found largely to involve the knee-joint and extensor muscle, and to be bathed with foul dark-brown purulent discharge. After hot antiseptic washing and removal of pieces of lacerated muscle, the wound was lightly packed with cyanide gauze. The patient felt better after this, but the temperature reached 102° in the afternoon, falling at night and early morning to 100° or less; the pulse was about 90 for some days, during which chloroform was inhaled at each change of dressings.

On May 7th, the twenty-first day, the wound was found covered with a greyish-yellow exudation, and its margins much raised and thickened. This was judged to be the almost obsolete condition known as "hospital gangrene." Nitric acid was then freely applied, under chloroform, to these morbid surfaces. Three days later, the tissues having in the main become more healthy, but still showing patches of the greyish exudation, Mr. E. R. Bickersteth was consulted as to the diagnosis of hospital gangrene, which he fully confirmed, from experience dating from the days when this scourge was rife. At his suggestion the thermo-cautery was freely applied to the exudation that had re-formed. Obvious improvement followed the cautery, and each application of the nitric acid, which was preferred on all other occasions; the wound in most parts assumed a healthier look; but as the knee obviously needed a good fixing apparatus, the anaesthetic was again given, and the whole limb thoroughly steadied in a Thomas's knee splint. About the twenty-eighth day nitric acid was again applied, under chloroform, to recurrent patches, and some four days later all signs of hospital gangrene were gone, and the temperature had become normal.

About the thirty-fifth day great pain was felt below the knee on the outer side, attended with loss of sleep. On the fortieth day an incision was made and 1½ oz. of sweet green pus evacuated. The bleeding in the skin was stopped by acupressure with common pins. After this the patient became more comfortable and slept, but a few days later he had a return of pain, with burning, in the knee, this time on the inner side, followed by increased discharge from the incision on the outer side, with consequent relief.

Although great local improvement had occurred, these drawbacks were a great tax upon him, as he was greatly emaciated and short of resisting power. The outlook became so serious that, to save his life, amputation appeared inevitable, and with the consent of himself and parents it was arranged for a couple of days later. On the intervening day, however, things looked better, and this procedure was abandoned.

Three months and a week after the accident, two and a half months after the gangrene was thought to have been past, the temperature rose to 102°, with headache; and a patch of the grey exudation again appeared. This was rubbed with silver nitrate, and he was better next day, but still had pain. The caustic was again applied four days later, and a third time after three more days. The dressings were then changed every other day, and he got up on the intervening days, and steadily recovered.

Four months after admisssion, the knee being ankylosed in the straight position, he was, for security in getting about, fitted with the shorter ("calliper") splint (as in Fig. 2), attached to a cloth boot, and kept on day and night. He was discharged on August 24th, 1890, but some three or four weeks later discarded the splint, as he found the stiff straight knee unyielding, and comfortably fit for use without it.

Remarks.—This man accosted the writer in the street on February 7th, 1910, nearly twenty years after the accident, in which interval nothing had been seen or heard of him. A few days later he was photographed (Fig. 1). He is a tax collector and has walked many miles a day for years, with very little halt in spite of his stiff knee, on which the scars of his injury and operations are manifest. This is the only case of hospital gangrene ever seen by the writer, whose previous notions were chiefly gained from Lister's account and treatment given in the *Lancet* of March 23rd, 1867, and pictorially from the chromo-lithographs in the Surgeon-General's report of the American War, which he had copied and enlarged many years ago, and has used ever since to illustrate his annual lectures.

Fig. 1.—Twenty years after injury.

II.—*Compound Fracture of Femur: Recovery without Defect.*

On November 4th, 1898, the writer was called by Dr. Alexander Fisher of Liverpool to the case of a youth, aged 16, who had met with compound fracture of the right thigh near the knee. In the course of his duty as apprentice engineer, while sitting on the slide-rest of a large machine lathe at a foundry, his limb was jammed between the tool and the work. There was a wound on the outer and another on the inner side, both leading to a jagged fracture of the bone.

The dressing and setting of the fracture were carried out on his mother's dining-table, which served afterwards as his bed during recovery. A large tea-tray was placed under the limb to catch the copious washings of the skin, while the wounds were protected and tied up with cyanide gauze. The surfaces were begrimed with dirt and machine oil. Warm carbolic lotion 1 in 40 was alone used for this purpose, vigorously rubbed in with added soap, after which the wounds were dressed with carbolized cyanide gauze, firmly bandaged on with the limb held at full length. A Thomas's knee splint, projecting some distance below the foot, was slipped on, and the limb kept in it at full length by tails of wide, strong bandage firmly stuck to the leg by plasters, doubled with the sticky sides out, fixed by rolls of bandage over all, and the loose tails tied to the lower end of the iron splint; counter pressure was provided by the padded ring at the upper end against the perineum.

Plenty of dressing was packed around the wounds and fractured region, covered with hollow splints of sheet iron surrounding the thigh, encircled by strips of bandage and tied firmly to the iron bars of the longer splint. Perfect stillness was attained from the first, and all along the patient could control his own attitudes on the improvised bed, and could very shortly sit up occasionally when he chose.

The dressings were changed on loosening one or two at a time the sheet-iron splints, of which that placed behind the limb reached a few inches beyond the knee, and was independently slung to the iron bars, keeping level the fractured region, and seldom needing adjustment. No suppuration occurred in the wounds, which soon closed very kindly in their depths, and at the surface cleanly granulated.

The severe pinching of the injured part in the irresistible machinery, during the few seconds before stoppage by the turner, led to superficial necrosis of the skin in patches near the wound, on the outer side of the limb. This was at first dressed like all the rest with carbolized cyanide gauze; but, when these necrosed layers gave place to ulceration, the great tenderness was relieved by smearing boric acid ointment on the gauze, and avoiding the irritating carbolic lotion. A shortened "calliper" knee-splint (Fig. 2) attached below to a boot, with bandage round the knee (supported on a leather band pinned across) was now used, and worn night and day after six or seven weeks, by which time the bone was firmly united and the sores healed. This enabled him to be up and about the house, and by its full length took most of his weight off the limb, for fear of bending the unhardened united bone. In less than three months he was allowed to remove the splint at night, and to dispense with the bandage round the knee, thus permitting slight use of the thigh muscles and a trifling movement of the knee-joint.

Fig. 2.—Three and a half months after injury.

Remarks.—The leather band, pinned behind as a support to the knee, is shown here pinned in front of the thigh, to be out of the way and permit a view of the inner scar during the photographic process. It will be noticed that the knee-joint is thickened, an almost necessary part of the injury, due to the violence that fractured the bone. The maintenance of the limb in the straight position, for the time required to secure due hardness of the bony union, is always followed by gradual return of the knee to suppleness and to the proper shape shown in the other limb. Any attempt to hurry this restoration of the knee, by forced movements, is apt to result on the contrary in fresh injury and swelling, with delay or even prevention of suppleness.

VAGINAL HYSTERECTOMY FOR ENDOMETRITIS.

BY F. P. STURM, CH.B.ABERD.,
LEIGH, LANCS.

THE following case is recorded because an unusual, not to say heroic, method of treatment for a fairly common and very troublesome condition has resulted in a measure of success which is not often attained by the less drastic procedures usually carried out in cases of equal severity.

CASE.

Early in 1910 I was consulted by a married woman, 39 years of age, who had been a hard worker all her life, and was the mother of a large and healthy family. She complained of constant dragging pains in the groins and back, dysuria, menorrhagia, and a profuse semipurulent discharge which was occasionally offensive. For several years she had been practically a chronic invalid, and so profoundly was her general health undermined by the constant pain and discomfort that both she and her relatives were convinced of the presence of malignant disease. She said that she had undergone several operations, by which I understood her to mean that she had been curetted. Examination, in the course of which a very fetid pessary was removed, revealed a large "boggy" uterus, extremely painful upon pressure, freely movable in every direction, with the fundus well above the pelvic brim. The sound passed four inches. The cervix, which was the size of a Tangerine orange, was studded with innumerable small semi-transparent nodules and was very friable to the touch. The nodules were soft, there was no ulceration, and the general appearance was not that of malignancy. Pressure upon the uterus caused quantities of muco-pus to pour through the cervical canal. The possibility of specific infection was excluded by repeated microscopic examinations for the gonococcus, which was never found.

The chronic course of the disease and the very gradual deterioration of health from the long-continued pain and discharge were also points which were against the probability of malignant disease. Upon the other hand, the uselessness of any mere scraping operation was so evident and the danger of ultimate malignant degeneration so real that I had no hesitation in suggesting hysterectomy. Dr. M. J. Halton was called in to consultation, and agreed that no curetting, however thoroughly carried out, could cure the condition as it existed. It is due to him that the patient and her relatives finally agreed to operation, which I performed a week subsequent to the consultation.

Operation.

The uterus was removed by the vaginal route. The cervical mucosa having been incised all round, a sound was passed into the bladder, which was then easily peeled off the anterior wall of the uterus and thrust upwards. The rectum was dissected from the vaginal wall, the peritoneum opened anteriorly and posteriorly, and each broad ligament clamped with a single 11-in. pressure forceps. A few snips with blunt-pointed scissors freed the uterus from all attachments and permitted its removal. There was no bleeding. Not a single ligature or suture was used. The vagina was lightly packed with iodoform gauze and the patient put back to bed. The clamps were removed under chloroform in forty-eight hours. The gauze packing was not replaced, a simple antiseptic pad upon the vulva being all that was considered necessary.

Result.

The temperature never rose above normal, and the discharge, which ceased entirely within ten days, was so scanty that the dressings were scarcely soiled after the first two days. During the forty-eight hours following operation—that is, before the clamps were removed—the catheter had to be passed several times. Within ten weeks of the operation the patient was serving customers in her shop.

I saw this patient again only a few days ago—that is, about ten months after the operation. She told me that she was enjoying perfect health for the first time during many years. She is able to perform all the onerous household duties which fall to the lot of women of her class, even including the weekly washing. It may be claimed that she is cured therefore in the fullest sense of the term.

Though I have been unable to find in the literature at my disposal that hysterectomy has been advocated as a routine treatment for chronic corporeal endometritis, this case has convinced me that it is a justifiable treatment under certain circumstances. Every practitioner knows how hopeless is the condition of many of these women. The minor procedure of curetting, while it may relieve some cases in which the disease is not of long standing and the tissues are still comparatively healthy, is at best but a palliative measure, more likely to determine the onset of malignant degeneration than to eradicate precancerous conditions. There seems to be no reason why any woman, within sight of the menopause, who is suffering from such a distressing complaint, should retain an organ which is not only useless but is even a constant menace to her health and existence, especially when that organ has already satisfactorily performed all the functions for which it was created. Vaginal hysterectomy by the double clamp method is so safe, so simple, and can be so rapidly performed, that I see no reason why it should not be the operation of election in cases of chronic endometritis which have failed to respond to more conservative and less effectual procedures.

A CASE OF TRAUMATIC PNEUMOTHORAX AND PLEURAL EFFUSION SUCCESSFULLY TREATED BY RESECTION.

BY

F. S. RHODES, M.R.C.S., L.R.C.P.,

SURGEON, FLEETWOOD COTTAGE HOSPITAL.

THE following case of traumatic injury to lung, followed by pneumothorax and then pleural effusion, which recovered after resection of rib and drainage, may be of sufficient interest to publish, as several authorities advise against drainage of the pleural cavity in effusion. Mr. Godlee, with Dr. Fowler, are emphatic on this point. They say, at page 596 of their book entitled *Diseases of the Chest:*

The surgeon is often asked to open these, especially if the fluid has become slightly turbid. My experience is that if this be done the fatal conclusion is hastened. Such patients get along well with large accumulation of fluid in the chest, but when free opening is made they become short of breath, and as the discharge is copious for a long time, it is very likely that septic organisms will be allowed to enter. This is the beginning of the end.

Another interesting point is that while the remittent, and then intermittent, temperature, together with the general condition of the patient, strongly pointed to an empyema, a bacteriological investigation of the fluid showed it to be sterile.

History of the Injury.

On January 26th, 1909, G. B., aged 17, a farm labourer, left his horse and cart at the door of a shop. A passing lorry caused the horse to bolt. He immediately gave chase, and managed to gain a hold on the back part of the right shaft. After running like this for about a hundred yards, and finding he could no longer keep pace with the galloping horse, he threw himself sideways from the cart, but was caught by the wheel, and the cart, containing a load of five hundredweight, passed over his left leg about 3 inches above the ankle.

State on Examination.

I found the patient lying on the ground suffering from a compound fracture of the left leg, and complaining of great pain in the region of the right scapula. After seeing to his injuries he was placed on a stretcher and conveyed by train to Fleetwood Cottage Hospital. The leg was placed in splints and gave no further trouble. On the right side of the chest ill-defined crepitus could be elicited in the region of the scapula, but it was difficult to say whether it was due to injury of the scapula or to the ribs beneath it.

Progress.

In the course of a few days the patient's breathing became embarrassed, the right side of the chest was distended, the heart pushed over to the opposite side, the percussion note tympanitic, and all the signs of pneumothorax were present.

The temperature was 99° F. on admission, but rose steadily to 102° at the end of eight days, there being a morning remission to 100°. This remittent temperature lasted for two weeks, when the patient became suddenly very ill, and the temperature rose abruptly to 104° for twenty-four hours. A sudden drop to 99° was charted next morning, and for the next four and a half weeks the temperature was intermittent, averaging 98° in the morning and 100° or 101° in the evening.

Aspiration.—With the rise in temperature the signs of pneumothorax were replaced by dullness, etc. The question now arose as to whether the condition was pneumonia, traumatic pneumonia, or pleural effusion. As slight improvement followed, it was decided to watch the case and see if the condition would clear up. The improvement was not maintained, and on March 22nd I aspirated and withdrew nearly four pints of viscid brown fluid so thick that it flowed but slowly through the cannula. Improvement at once took place; the temperature fell to normal and remained there, and the general condition became more satisfactory.

Second Aspiration.—He left hospital on April 21st, 1909, but three days later became very ill; he felt too weak to stand, had rigors and dyspnoea, and on the following day was readmitted to hospital. The right side of the chest then gave the same physical signs as were present before aspiration. Aspiration was again performed, and about two pints of fluid similar to that removed on the previous occasion were withdrawn.

Resection.—Two days later, Dr. McKinnon of Fleetwood giving the anaesthetic, I resected a portion of rib in the posterior axillary line on a level with the nipple and drained the pleural cavity.

RESULT.

The sinus closed in about three weeks, and the patient has remained quite well since.

Some of the fluid was sent to Professor Delépine at Manchester for bacteriological examination. No organisms were found in cover-glass preparations, and no growth was obtained on inoculating tubes of various culture media.

At the present time—January, 1911—the patient remains in good health, and is able to follow his employment. The right side of the chest shows flattening, with droop of the shoulder and prominence of the scapula. The chest expands fairly well on inspiration, although the breath sounds are weak on the right side. Measurement shows the circumference of the right side of the chest to be 1¾ in. less than that of the left side taken on level of nipple.

THE report submitted at the thirty-seventh annual meeting of the Central London Throat and Ear Hospital on May 9th showed that during the year 728 patients and 11,404 new out-patients had received treatment. Of the former, 58 per cent., and of the latter 37 per cent., were sent to the hospital by medical men. This fact, it was pointed out, not only indicated the esteem in which the institution was held, but disarmed any criticism as to abuse of its wards and out-patient department.

THE
THERAPEUTIC COMMITTEE
OF THE
British Medical Association.

REPORT ON THE STANDARDIZATION OF PREPARATIONS OF INDIAN HEMP.

PART I.—*THE VALUE OF THE "IODINE NUMBER."*

BY

C. R. MARSHALL and J. H. WIGNER.

THE method of standardizing preparations of cannabis indica at present employed is a physiological one, and consists in the administration to dogs of sufficient doses to produce distinct cerebral depression. The chief symptoms are sleepiness and muscular weakness and incoordination, the ataxia being usually the most obvious, and for purposes of standardization the most important, symptom. The muscular weakness, which is of central origin, affects mainly the hinder parts, and frequently causes the assumption of a curious crouching position. But none of the symptoms produced by Indian hemp in animals are peculiar to this substance; they are obtained with other drugs causing depression of the higher cerebral centres.

The physiological method possesses some disadvantages. Even when carried out under apparently similar conditions, the percentage of experimental error is considerable. Different dogs appear to be differently susceptible to the action of the drug, and the variations are not explainable by differences in the rate of absorption. In animals showing marked variation from the average, however, subsequent administrations appear to produce a more constant effect. Nevertheless, it is advisable to test a preparation on more than one animal. A greater degree of accuracy can be obtained by experimenting on oneself, and this method we have adopted in the present investigation.

The greatest disadvantage of physiological standardization is its inadaptability to general use. It can only be adequately employed by persons possessing some knowledge of experimental pharmacology, and consequently cannot be employed by retail pharmacists, even where the law allows it. A preparation cannot therefore be conveniently standardized from time to time, and, owing to its liability to deteriorate by keeping, it may not possess the same activity when dispensed as when bought. The physician has therefore not a sufficient guarantee of the uniformity of any preparation of cannabis indica he may have prescribed. The evil is minimized, we believe, by pharmacists purchasing small quantities only of these preparations, but it would be a great advantage if a method of standardization dependent on some physical or chemical character, and one adapted to the ability of the average pharmacist, could be devised. Comparatively recently a method of evaluating Indian hemp products has been suggested by Mr. D. Hooper[1] of the Indian Museum, and we have latterly examined this method to determine its applicability for purposes of standardization. The investigation forms the subject of the present report.

Mr. Hooper's method is based upon the observations of Wood, Spivey, and Easterfield that cannabinol reacts with bromine at ordinary temperatures, and is unacted on by boiling alcoholic potash. In his first experiments he endeavoured to purify the extracts by saponification with alcoholic potash "in order to remove organic acids, resin, wax, fixed oil, and the lighter terpenes," and afterwards he determined the iodine values of the unsaponified residue. In some later experiments unsaponified extracts appear to have been used. The iodine determinations were made on various samples of different ages and from different sources, and his figures seem to show that the iodine numbers of cannabis preparations of the same original quality decrease with age (as the pharmacological activity is known to do), and that in comparing fresh samples of different origin the most valuable, and presumably the most active pharmacologically, show the highest iodine numbers.

It is necessary to state that Hooper suggested the method only as a means of determining the commercial value of a crude cannabis preparation, but we should expect this to vary, at least roughly, with the physiological activity. As Hooper's results were not controlled by physiological experiment, it seemed desirable to reinvestigate his method, keeping this point in view.

The method, it seems to us, would be of value for purposes of standardization only if the active principle (or some inert substance which always accompanies it in a fixed ratio and is not easily separated from it) gives a relatively high, and other substances not easily removable and pharmacologically inert a relatively low iodine value, or vice versa. If physiologically inert or almost inert substances possessing an iodine number approximating to that of the active principle occur in variable proportions in preparations of Indian hemp, the method is obviously of no value as a means of standardization. Unfortunately this appears to be the case.

In order to reduce the sources of error we decided to work with pure or approximately pure principles. We examined: (1) A sample of original cannabinol prepared by Wood, Spivey, and Easterfield in 1897, which had been kept in a sealed tube for eleven years, and which when tested appeared to have lost little, if any, of its pharmacological activity; (2) the same cannabinol after oxidation by a current of dry air, a process which has been shown by one of us to diminish its pharmacological activity; (3) various fractions obtained by the distillation of an extract of the same charas from which the above cannabinol was prepared.

The charas, which had been kept in a store for twelve years, was extracted with alcohol or ligroin, and after removal of the solvent by distillation the extract was fractionally distilled, the lower fractions under ordinary, the higher under diminished, pressure. Lower boiling and higher boiling terpenes and various higher boiling fractions were isolated. Of the last-named fractions, the three which were of approximately the same boiling point as the original cannabinol were almost identical with it in general physical properties, but were much less active pharmacologically.

The following iodine values as determined by Hubl's method are typical of those obtained:

		Iodine Number.
	Original cannabinol (strongly active)	189
	Ditto (after oxidation)	184
Fractions obtained from 12 year-old charas.	Lower terpene fraction	67
	Higher terpene fraction	180
	Residue after distilling off terpene (very slightly active)	196
	Fraction boiling at 280° to 300° C. at 15 mm. Hg pressure (very slightly active)	247
	Ditto (after oxidation)	229

Some of the higher boiling fractions were dissolved in ether and the mixture washed with caustic soda solution, and afterwards redistilled. No noteworthy alteration in the iodine values of the products was obtained.

The figures show that the very active sample of cannabinol gives a lower iodine number than similar and almost inert samples prepared from old charas; that the oxidation of cannabinol, although diminishing considerably the physiological activity, does not greatly lower the iodine value; and that the iodine number of the higher boiling terpenes, which possess no characteristic cannabis effect approximates closely to that of active cannabinol. The determination of the iodine number seems, therefore, to be of no certain value as a means of estimating the pharmacological activity of cannabis preparations, and, consequently, it cannot be used as a substitute for physiological standardization.

REFERENCE.

[1] *Pharmaceutical Journal*, July 25th, 1908, p. 80; cf. also ibid., September 19th, 1908, p. 347.

THE late Mr. George Harding, a shipowner of Liverpool, whose will has now been proved, bequeathed £1,000 each to the Royal Infirmary, the Royal Southern Hsopital, and the David Lewis Northern Hospital, and sums of £500 and £100 to the Stanley Hospital and Hospital for Women respectively.

DUODENAL OBSTRUCTION AS SHOWN BY RADIOGRAPHY.

By ALFRED C. JORDAN, M.D.,

MEDICAL RADIOGRAPHER TO GUY'S HOSPITAL, AND TO THE ROYAL HOSPITAL FOR DISEASES OF THE CHEST.

(With Special Plate.)

In a paper published recently on Distension Changes in the Duodenum in Chronic Intestinal Stasis,[1] to which I furnished the radiographic evidence, Mr. W. Arbuthnot Lane described a condition of kinking at the duodeno-jejunal junction, and the changes resulting from it. The matter is dealt with further by him in a clinical lecture on the Kinks which Develop in our Drainage System in Chronic Intestinal Stasis.[2] I am now in a position to give definite radiographic proof of the actual existence of the changes he describes.

The duodenal obstruction clearly is of an intermittent nature. This should be carefully noted at the outset, for it is not to be expected that positive evidence will be obtained in every case and at every examination. In many cases with the typical signs of duodenal inflammation, and in some in which the fact of the presence of

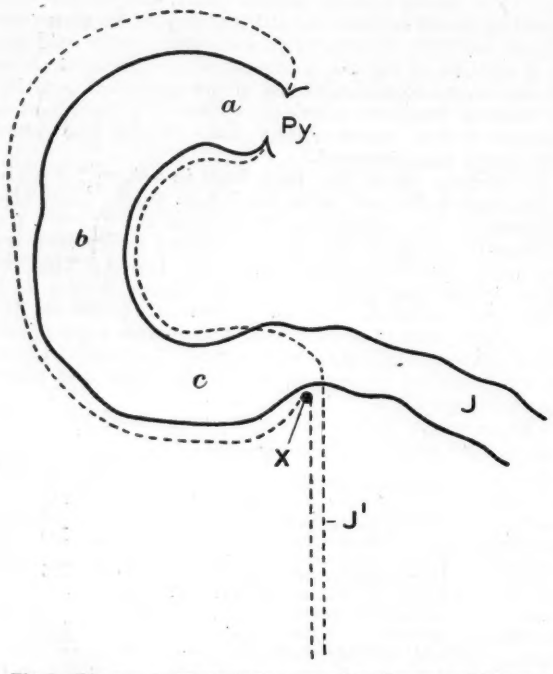


Fig. 2.—Diagram to illustrate the normal duodenum and jejunum (firm line), and the dilated duodenum and pendulous jejunum (dotted line) due to kinking, at the duodeno-jejunal junction, by the sharp lower margin of a peritoneal fold, indicated by the point ×. The distension of the duodenum is most marked in its first part, where it is least supported, and has a fairly complete peritoneal covering. It is in this part that inflammatory changes are set up in consequence of the abnormal distension. Py, Pylorus. *a*, *b*, *c*, First, second, and third parts of the duodenum. J, J¹, Jejunum in its normal and in its pendulous position.

a duodenal ulcer was subsequently proved by operation, the bismuth meal was seen to pass out of the stomach at a rapid rate as the result of the peristaltic contractions of that organ, and to course through the duodenum without showing any deviation from the normal. Now and then, however, while the gastric contents are passing through the pylorus rapidly, there is some delay in the passage from the duodenum to the jejunum, as in Fig. 1, which represents the stomach and duodenum of a woman of 56 suffering from nausea and vomiting with haematemesis. There had been melaena before admission. I found an hour-glass constriction of the stomach due to spasm, possibly set up by a gastric ulcer. The presence of a duodenal ulcer was not proved in this case, as the patient was discharged relieved a fortnight later.

This case gave me a hint: it was clear that I should only succeed in demonstrating abnormalities of the duodenum while there was obstruction to the passage of food through it. Fortunately Mr. Arbuthnot Lane was able to show me, in the course of several operations, the actual occurrence of obstruction due to kinking at the duodeno-jejunal junction. The diagram (Fig. 2) explains the condition. The end of the duodenum is normally fixed by a peritoneal band, while the jejunum is perfectly mobile at its commencement. The jejunum, instead of continuing in the line of the duodenum, as in normal cases, passes directly downward from this band, and kinks the tube abruptly. This is specially apt to occur in persons in an exhausted or enfeebled state.[3] The block which results from this kink produces distension in the duodenum; the dilatation is greatest in the first part of the duodenum because this part alone is movable and unsupported. The distension may not be sufficient to produce any change in the duodenum; it may, however, lead to engorgement, or in more severe cases ulceration of the mucous membrane. When the patient assumes the supine posture, the loop of jejunum no longer hangs down vertically, and the kink is relieved. The curative effect of rest in bed is thus explained; with the obstruction relieved, the duodenum

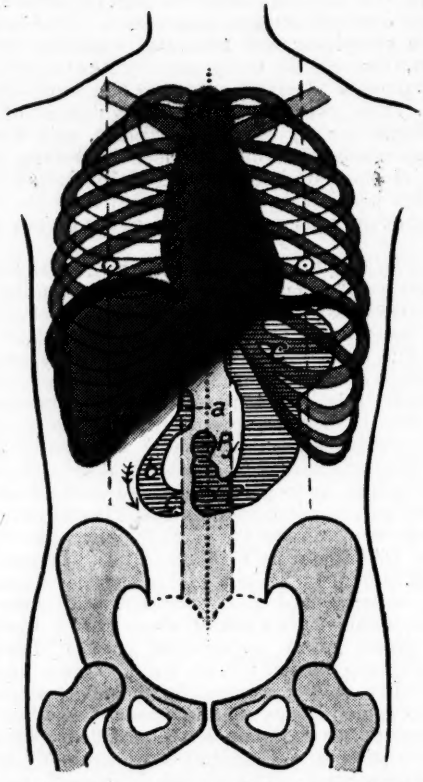


Fig. 4.—Tracing of the stomach and duodenum, taken immediately after Fig. 3, to show duodenal obstruction. C, P, Cardiac and pyloric portions of the stomach. Py, Pylorus. *a*, *b*, *c*, First, second, and third parts of the duodenum. The arrow shows the direction of the duodenal peristaltic contractions, which, though very powerful, were quite unable to overcome the obstruction, due to kinking, at the duodeno-jejunal junction. (See Fig. 5.)

is freed from the distension which persisted while the patient was upright, the dilatation of the duodenum passes off, and its mucous membrane soon returns to a healthy state.

The reality of this explanation was brought home to me very forcibly by the case of a patient sent to me for examination by Mr. W. Arbuthnot Lane—a very emaciated girl of 19, who had been healthy up to the age of 14, although she had suffered from obstinate constipation since childhood. At the age of 14 she began to suffer from pain after eating, and therefore to refuse food. The pain came on within a few minutes after food, and was obviously very severe. She had wasted gradually, but there was no vomiting. Her stomach was washed out frequently; large quantities of fluid and air were apt to accumulate in the stomach.

The Roentgen-ray examination was commenced with the patient in the upright posture. An emulsion containing 3 oz. of bismuth carbonate was introduced through a stomach tube, and showed the stomach to be dropped, so that the great curvature was in

TO ILLUSTRATE DR. A. C. JORDAN'S PAPER ON DUODENAL OBSTRUCTION.

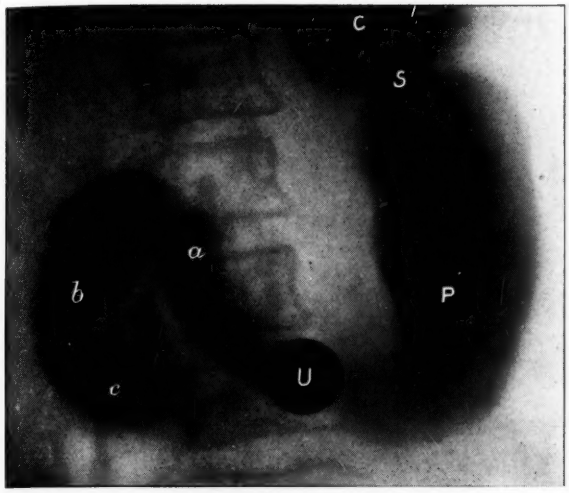


Fig. 1.—Stomach and duodenum after a bismuth meal, showing a spasmodic hour-glass constriction of the stomach, and delayed passage through the duodenum. C, P, Cardiac and pyloric portions of the stomach separated by a spasmodic constriction at S. *a*, *b*, *c*, First, second, and third parts of the duodenum. U, Umbilicus, marked by a penny.

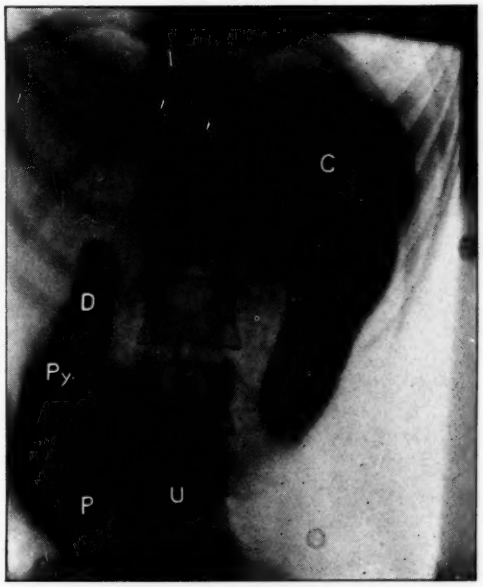
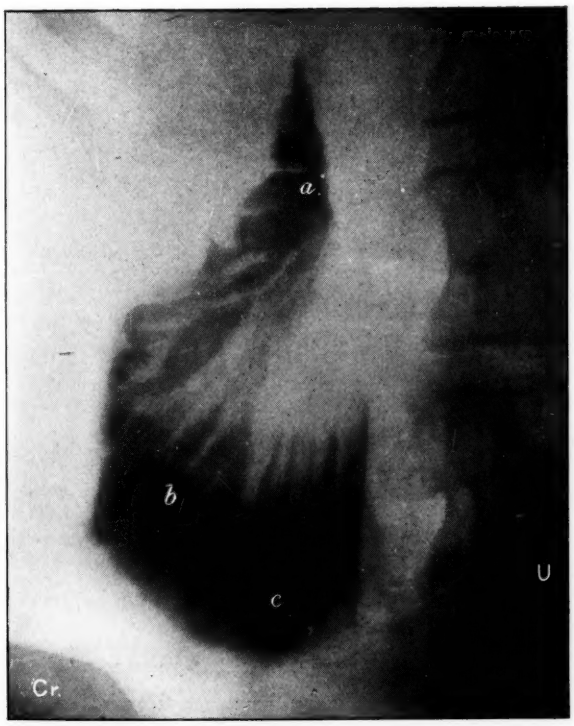


Fig. 3.—Large, dropped stomach, containing bismuth, as seen on the couch. The cardiac portion, C, and the pyloric portion, P, are filled with the emulsion which is passing freely through the pylorus, Py, into the duodenum, D. The intermediate portion is raised upon the vertebral bodies, and hence contains no emulsion. U, The umbilicus, marked by a penny.



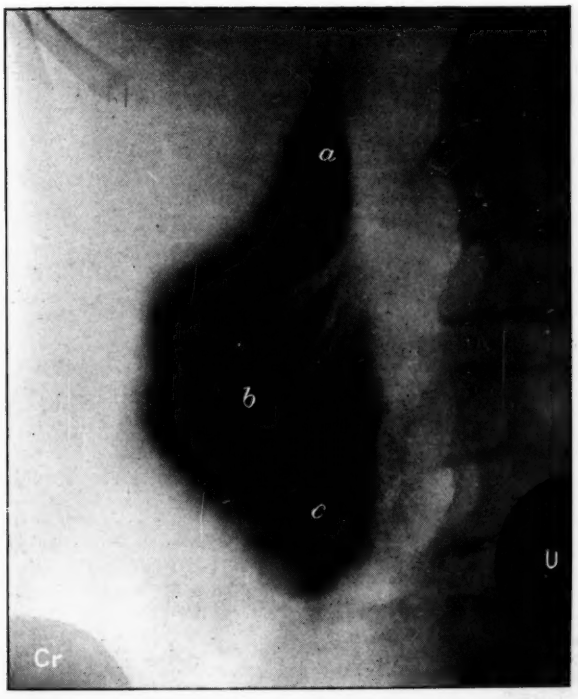


Fig. 5.—Duodenum, in the subject of Figs. 3 and 4, showing two phases of the powerful peristaltic contractions by which it sought (in vain) to overcome the effect of kinking at the duodeno-jejunal junction. (Confirmed by operation.) The duodenum appeared to be writhing. *a*, *b*, *c*, First, second, and third parts of the duodenum. Cr, Crest of ilium. U, Umbilicus, marked by a penny.

TO ILLUSTRATE DR. A. C. JORDAN'S PAPER ON DUODENAL OBSTRUCTION.

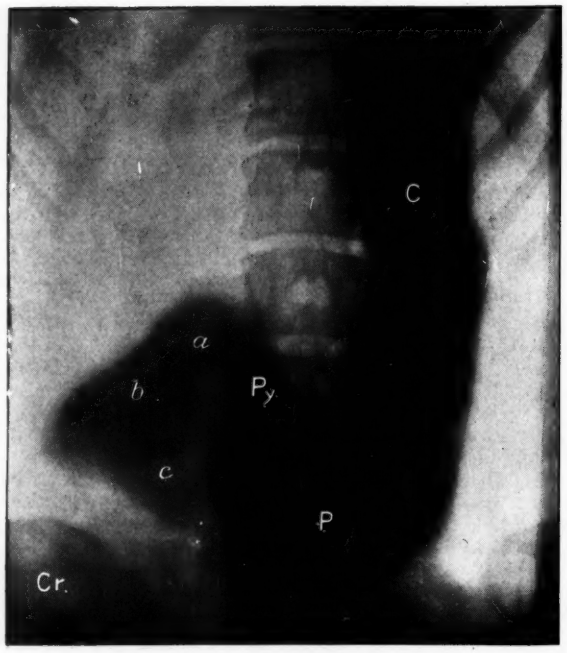


Fig. 6.—The long dropped stomach and the duodenum in a case of suspected duodenal ulcer, examined on the couch after a bismuth meal. The behaviour of the duodenum was similar to that in Figs. 4 and 5, though less extreme. C, P, Cardiac and pyloric portions of the stomach. Py, Pylorus. *a*, *b*, *c*, First, second, and third parts of the duodenum. Cr. Crest of ilium.

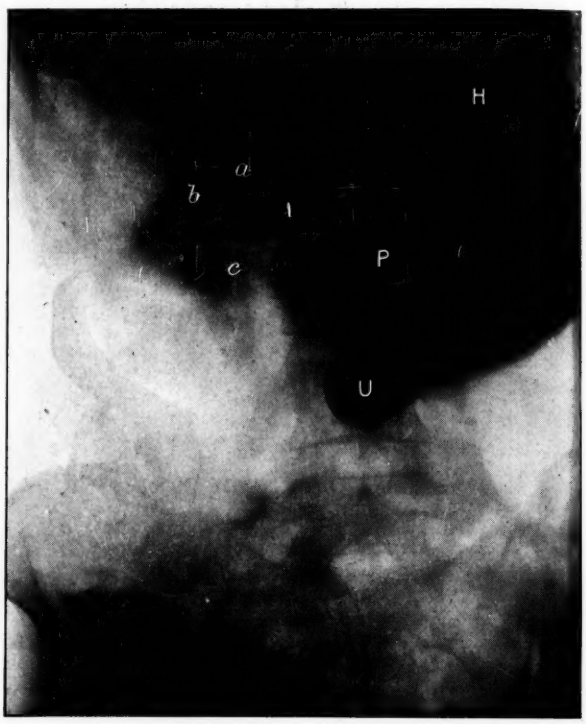


Fig. 8.—Stomach and duodenum in the same subject as Fig. 7, taken two hours later. The cardiac portion no longer contained any bismuth emulsion. The isolated pouch, H, and the pyloric portion, P, still contained bismuth, and the duodenum was seen to be contracting actively against an obstruction, due to kinking at the duodeno-jejunal junction. (Confirmed by operation.) *a*, *b*, *c*, First, second, and third parts of the duodenum. U, Umbilicus, marked by a penny.

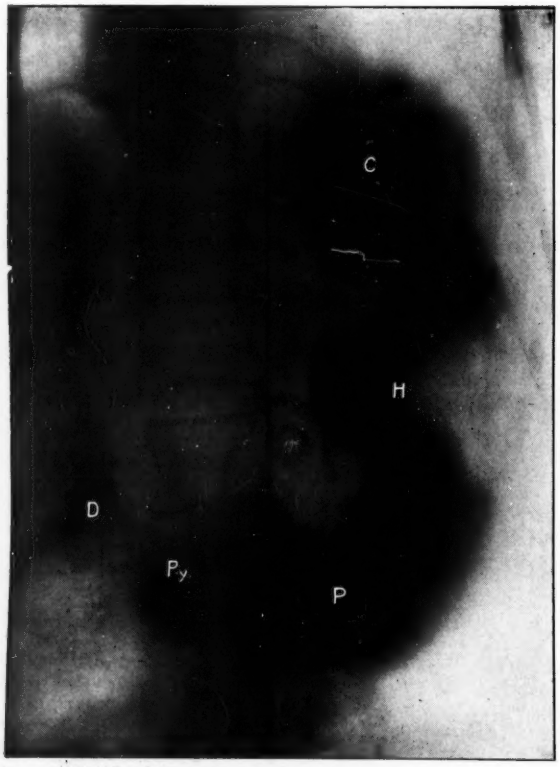


Fig. 7.—Stomach and duodenum examined on the couch after a bismuth meal, showing, at H, a cicatricial hour-glass constriction and a small isolated pouch. C, P, Cardiac and pyloric portions of the stomach. Py, Pylorus. D, Duodenum.

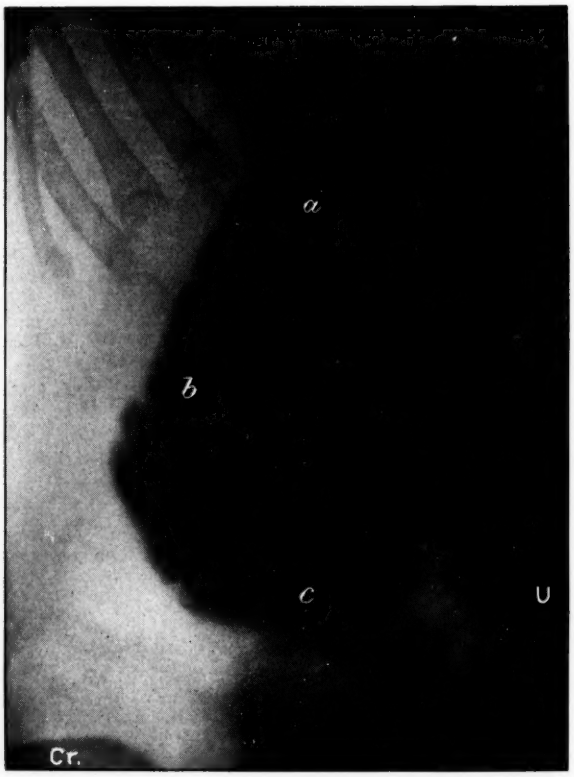


Fig. 9.—Dilated duodenum with partial obstruction, due to kinking at the duodeno-jejunal junction. *a*, *b*, *c*, First, second, and third parts of the duodenum. U, Umbilicus, marked by a penny. Cr, Crest of ilium.

the pelvis. Active gastric peristalsis was observed. Examining the patient on the couch (Fig. 3), the bismuth emulsion was seen to be passing through the pylorus freely and entering the duodenum. On reaching the third part of the duodenum, the bismuth advanced no further, and repeated powerful contractions of the duodenum took place in the endeavour to forward the contents into the jejunum (Fig. 4). The attempts were seen to be ineffectual, and were accompanied by great pain. Fig. 5 shows the duodenum in two phases of its violent contractions. One hour later some of the bismuth was scattered through the ileum, but by far the greater part was still in the stomach. The pylorus was again seen to be normal, while the duodenum was contracting violently but uselessly to expel its contents. After four hours a similar condition still obtained, though a good deal of bismuth was now scattered through the ileum, and a fair amount had reached the lower end of the ileum. At the end of nine hours there was still some bismuth in the stomach, and the appearances of the stomach and duodenum were as before. The duodenum appeared to be writhing in an unsuccessful effort to expel its contents. There was a mass of bismuth in the lower end of the ileum; none in the caecum or beyond.

During the examinations the duodenal obstruction was seen to relax occasionally and allow part of the contents to proceed. After twenty-seven hours the stomach and duodenum were empty. There was some bismuth in the caecum and ascending colon, but the greater part was dried up in the end of the ileum. At the end of fifty hours there was some bismuth (about one-third of the original amount) in the rectum. There were traces in the caecum. Powerful contractions of the duodenum were seen to be taking place, although it contained nothing more opaque than Benger's food. Clearly the third part of the duodenum was the seat of an acute obstruction which yielded partially from time to time.

Mr. Lane operated, and the actual state of affairs was revealed. The duodenum was dilated, especially in its first part, while the duodeno-jejunal junction was kinked over a sharp peritoneal fold or band, and the jejunum hung down vertically over this band as shown in Fig. 2. Mr. Lane performed a posterior gastro-jejunostomy, and the patient made a very good recovery.

This was an extreme case, and as usual the duodenal trouble was not the only abnormality. For not only was the stomach greatly dropped, but there was very great delay at the lower end of the ileum. The case is of great importance; it shows that the condition of duodeno-jejunal kinking over a band (Fig. 2), described by Mr. Lane, may occur in an extreme degree, and may lead to distension of the duodenum with most severe symptoms.

I next proceeded to ascertain the conditions in less extreme cases, and my investigation presently led to positive results. I find it necessary to give a full-sized meal, containing as a rule 4 oz. of pure bismuth carbonate in the form of a thick emulsion. This may be made up with sugar of milk and water; a little corn-flour or other ingredient may be added to thicken the emulsion, which should contain no lumps, lest they set up pyloric spasm, and prevent the rapid filling of the duodenum. Hence bread and milk is not appropriate unless it be thoroughly broken up.

The stomach is examined in the usual way after taking this meal—first in the vertical posture, then upon the couch. It is usually necessary for the patient to lie on the right side for two or three minutes to enable a large proportion of the meal to enter the pyloric part of the stomach, and to pass through the pylorus into the duodenum. The patient now lies on the back once more, when the duodenum may be examined. If it contains little or no bismuth, the patient is asked to sit in a chair for from ten to fifteen minutes, and is then examined upon the couch once more. If there is still no appreciable quantity of bismuth in the duodenum, the patient sits up for a further period of from ten to fifteen minutes; after this time—half an hour from the time of taking the bismuth meal—I have never yet succeeded in obtaining any information regarding the duodenum except in one case, to be described presently (Figs. 7 and 8), in which an hour-glass constriction prevented the emulsion from entering the pyloric portion of the stomach in sufficient quantity to give the desired result in the first half-hour.

When duodenal obstruction is present it may persist for several hours, and I have little doubt further experience will show that the first evidence of duodenal obstruction sometimes appears later than I have observed hitherto. This would seem especially likely in the case of patients whose pain commences two or three hours after meals, for the pain is due to distension of the duodenum resulting from obstruction.

In searching for a reason why positive information was obtained in certain cases and at certain times only, and absolutely withheld in many others, two or three facts soon appeared. It was found that patients who were up, and perhaps continuing their ordinary vocation, were more apt to show definite results than those who were resting. Hence I was most successful with ambulatory patients, and with these only when they were in pain, showing that their pain was due to obstruction. I have shown that rest in bed usually abolishes the *x*-ray signs of duodenal obstruction which existed prior to treatment by recumbency, and it is well known clinically that rest in the supine posture usually relieves all symptoms of duodenal ulcer.

A point to note is that the successful discovery of duodenal obstruction depends almost necessarily upon an unobstructed pylorus. When the pylorus is obstructed or the stomach is not contracting actively the duodenum never becomes properly filled and the characteristic appearances are not obtained.

Fig. 6 illustrates the case of a woman of 30 who had suffered from dyspeptic pain for six months. In her case the appearances greatly resembled those shown in Fig. 5, though they were not nearly so extreme. The stomach was dropped and very long; the duodenum was seen to be in active peristaltic contraction, but its contents, instead of passing on into the jejunum, were returned time after time, and the duodenum contracted over and over again in the endeavour to forward its contents into the jejunum. Three weeks' rest in bed under the care of Dr. Lauriston E. Shaw led to the relief of all her symptoms, and to the abolition of the duodenal obstruction, as shown by the *x*-ray examination. Several weeks later this patient came to report progress, and stated that she had been free from pain for four or five weeks, but that the pain was beginning to come on again. This is a frequent occurrence in the medical treatment of duodenal ulcer.

Another most instructive case was under the care of Mr. L. A. Dunn. A provisional diagnosis had been made of pyloric obstruction due to the cicatrization of an old gastric ulcer. The *x*-ray examination with a bismuth meal showed that there was, in fact, cicatricial contraction of the stomach, but that its position was not at the pylorus as anticipated, but in the middle of the stomach, where it gave rise to a form of hour-glass contraction (H, Fig. 7), with a small portion of stomach in this region forming an isolated pouch. There was no obstruction at the pylorus; in fact, the bismuth emulsion which entered the pyloric portion of the stomach passed through the pylorus at the normal rate as the result of active peristaltic contractions. Had the examination ended here, the information gained would have been but partial; for, observing the patient again two hours later on the couch, it was seen that the duodenum showed obstruction at the duodeno-jejunal junction of much the same kind as in the cases already described (Figs. 5 and 6); repeated peristaltic contractions of the duodenum failed to forward its contents into the jejunum (see Fig. 8). This was an important point when it came to treatment, for there was obstruction at two distinct parts, at the cicatricial hour-glass constriction and at the duodeno-jejunal junction. Thus a cure could not have been expected from either of the ordinary operations—that of connecting the two parts of the stomach above and below the hour-glass constriction by a new opening, or the ordinary operation of posterior gastro-jejunostomy. Mr. Dunn solved the problem in a very practical way by making his anastomosis between the upper portion of the stomach (C, Fig. 7) and the jejunum, thus cutting both obstructed portions out of the circuit, and supporting the jejunum. The patient made an excellent recovery.

Quite recently a patient was brought to me by Dr. A. P. Beddard and Mr. D. J. Armour for an examination of the alimentary canal. She was 48 years of age, and had

suffered from attacks of pain and nausea for seven years, with vomiting when the pain was severe. Her digestion had always been weak; there was great headache, and she had been getting thinner for the last year; there was tenderness to pressure in the caecal region.

I found the stomach dropped, much as in the case of Fig. 6. Gastric peristalsis was very active, the bismuth emulsion passing through the pylorus rapidly and entering the duodenum; there was considerable dilatation of the duodenum, and a good deal of obstruction to the passage from the duodenum to the jejunum (see Fig. 9). I have no doubt the obstruction becomes absolute whenever the patient is at her worst.

The subsequent course of the bismuth meal showed no delay or obstruction at any other point, but the large intestine was dropped so that the caecum, the sigmoid flexure, and the rectum were all in the pelvis together with the great curvature of the stomach and a dropped loop of the transverse colon.

Duodenal obstruction is frequently associated with obstruction at the lower end of the ileum or in the large intestine. Many of the patients exhibit dropping, not only of the stomach, but also of the large intestine. There is frequently great delay in the passage of faeces through the large intestine, and in some cases there is considerable delay in the last portion of the ileum. However, the duodenal obstruction is often the most marked abnormality, and may be the only one which calls for active treatment. In such cases the operation of gastro-jejunostomy relieves all symptoms, and this operation may be expected to do more than place the duodenum at rest by cutting it out of the circuit. As Mr. Lane has pointed out, the jejunum, when attached artificially to the stomach, is supported in such a way that it cannot drop and cause kinking at the duodeno-jejunal junction.

Much controversy still rages round the diagnosis and treatment of inflammatory diseases of the duodenum. I hope that the observations I have described, based as they are on fact, will be of real value.

REFERENCES.
[1] *Surgery, Gynaecology, and Obstetrics*, March, 1911. [2] BRITISH MEDICAL JOURNAL, April 22nd, 1911. [3] W. Arbuthnot Lane, Kinks in Chronic Intestinal Stasis, Ibid.

Memoranda:
MEDICAL, SURGICAL, OBSTETRICAL.

THE EFFECT OF SALVARSAN ON TREPONEMA PALLIDUM.

WITH reference to my two notes on the infective granule in certain protozoal infections, which you were good enough to publish in the JOURNAL for April 1st and April 15th respectively, I think it is of interest to record that I have now, thanks to the courtesy of Major F. F. Carroll and Captain McK. Saunders, of the Egyptian Medical Service, had an opportunity of examining by the dark-field method a preparation put up by Captain R. G. Archibald from a case of syphilis. It consisted of serous fluid obtained by scraping the surface of a buccal mucous tubercle which had previously shown the presence of *T. pallidum* in fair numbers. The hanging-drop was prepared without any addition of salt or citrate solution four hours after the patient had received a dose of 0·3 gram of salvarsan subcutaneously.

Captain Archibald and I found at first many motile, highly refractile granules, recalling very strongly those found in fowl spirochaetosis. There were also motionless and empty "periplasts" or cell membranes. After some search a *T. pallidum* was discovered actively engaged in granule-shedding, apparently in a manner identical with that displayed by *Sp. granulosa penetrans*.

Doubtless this phenomenon is evidence of a protective action on the part of the spirochaete. It is endeavouring to preserve itself from total extinction by expelling bodies which are undoubtedly resistant and which may possibly be of the nature of spores. It is evident that such action on the part of the spirochaete must have a distinct bearing on the treatment of the disease it produces. I notice that the Yakimoffs,[1] who have been testing the value of salvarsan in the case of rats and mice infected with *Sp. duttoni*, find that it is advisable rapidly to follow the first dose by a second. Now, as Leishman has found granule formation in the case of the spirochaetes of African tick fever ingested by *O. moubata*, it is almost certain that these are granule-shedders at the natural crises, and also under the influence of such a drug as salvarsan. It seems to me, then, not only possible, but probable, that this second dose recommended by the Yakimoffs acts by killing the granules which are being shed as a result of an inefficient first administration. In this way there is no storing up of resistant forms in the internal organs, and relapses are thereby prevented. If this is true of African tick fever, why not also of syphilis in the light of what I have stated? It should be easy to put the matter to the test, and if the observation is confirmed we should be a step forward in the use of the valuable drug which the genius of Ehrlich has added to our therapeutic armament.

ANDREW BALFOUR, M.D.,
Director, Wellcome Research Laboratories, Gordon College, Khartoum.

[1] W. L. and N. K. Yakimoff, Nouvelle communication relative au traitement de la maladie du Sommeil et de la tick-fever par le "606" (*Bull. Soc. Path. Exot.*, March 8th, 1911).

SUPPRESSION OF URINE.

I HAVE been attending for the last ten weeks a patient, aged 72, suffering from senile dementia. During that time, on at least five occasions, she passed no urine for periods of five, six, or seven days. When the urine was passed it was highly concentrated, very dark brown in colour, but contained no albumen. She ultimately died in a condition of coma, but, beyond some twitching of muscles, had no distinct convulsions. I have always understood that suppression of urine was fatal in a much shorter time.

Hastings. E. R. MANSELL.

GUNSHOT INJURY INVOLVING RIGHT ELBOW JOINT.

AT sea, in H.M.S. *Cornwall*, on October 25th, 1910, a gunnery instructor, while taking a class in aiming practice, got his right arm in front of the gun, and was struck by a Morris tube bullet. He ran to the sick bay, where I was at the time.

There was profuse arterial haemorrhage from the wound, which was situated in the fold of the elbow, just internal to the border of the bicipital fascia. The edges of the wound were scorched. There was no wound of exit. The haemorrhage, though considerable, was easily controlled by pressure. On probing, the bullet track was found to pass backwards and inwards towards the point of juncture of the internal condyle and the humeral shaft. Sensation and movement in the hand and forearm were perfect. The pulse at the wrist was found absent, and the hand cold.

The forearm was covered with wool and bandaged to the elbow. The wound was dressed with gauze and a large pad of wool, and the elbow well flexed by a figure-of-eight bandage, and the patient put to bed.

In an *x*-ray plate the bullet could be seen broken up on the internal condyle, but further detail could not be made out owing to the position of the arm.

The wound was dressed on November 1st and found quite healed, excepting a small pustule of suppuration at the surface. There was a great deal of swelling about the elbow and surface discoloration. The bullet track led down to a large hard swelling to the inner side and slightly above the joint, apparently a haematoma. The pulse at the wrist could only just be felt. Treatment was now very gentle massage twice daily; a carbolic fomentation 1 in 40 was put on for fear the superficial suppuration might infect the haematoma below. The forearm could not be straightened at the elbow by about 15 degrees.

By November 7th all fear of suppuration had gone and the swelling had so much subsided that it was possible to make a more minute examination; with the *x*-ray screen it could be clearly seen that the bullet had struck and broken up upon the internal condyle. The lower end of the right humerus was considerably broader than the left and crepitus was obtained, there being evidently a fracture of the internal condyle. The forearm was at once put up in the fully flexed position with figure-of-eight bandage and strapping. This caused extreme pain, but after a few

hours in this position of extreme flexion and supination the arm was quite comfortable, more so than it had been any time since the accident. After five days the arm was taken down, massaged and passive movement employed, the site of fracture being steadied by grasping with the other hand.

A good *x*-ray plate was obtained in which the line of fracture was clearly seen running from the olecranon depression through the shaft above the internal condyle and down into the joint. There seemed to be no tendency now to displacement, and the arm was put up at right angles with pad figure-of-eight bandage and a sling.

From this date the patient went on excellently. The arm was taken down and massaged and moved each day, and extension rapidly improved. On November 16th the patient was discharged to light duty with arm in sling. On November 20th the sling was discontinued, extension then being almost perfect. On December 20th there was full extension, the arm was functionally perfect, and there was no deformity. The radial pulse was still a great deal smaller than on the other side.

The case is of some interest—first, as showing the great benefit of the fully flexed position in correcting deformity, even although the arm was not fully flexed until thirteen days after the injury. Secondly, the loss of pulse at the wrist. I do not think the brachial artery was directly injured, but that probably it was occluded by pressure from the haematoma due to a wound of some branch of the anastomotica magna artery.

A. W. B. LIVESAY, F.R.C.S.E.,
H.M.S. *Cornwall*, Devonport. Staff Surgeon, R.N.

ERYTHEMA NODOSUM.

I WAS much interested to see in a recent issue of the BRITISH MEDICAL JOURNAL[1] an account by Dr. Joynt of a number of cases of erythema nodosum following measles.

In our practice at Aylesbury Dr. Horace Rose and myself have had four cases of erythema nodosum, three of which occurred in one week. Strangely enough, we have also had an epidemic of measles; but none of our patients, to our knowledge, had had an attack of or were recovering from measles before developing the erythema. One, however, was peeling as if from scarlet fever, of which we have also had several cases, and he had a history of a rash with sickness and sore throat previously.

The first case was a boy of 15 employed at a printing works, the second a schoolgirl aged 11, the third a boy of 14 also employed at the printing works, and the fourth a schoolgirl aged 9.

All the cases were severe and the patches were very large, in one case appearing on the arms also. In each case the fastigium of temperature was 101°. All were put on large doses of salicylates and made good recoveries.

If erythema nodosum is one of the manifestations of acute rheumatism in children, there seems also a good deal of evidence of its infectious nature.

JAS. C. CRAIG, M.A., M.B., Ch.B.Edin.,
Aylesbury, Bucks. D.P.H.Lond.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN THE HOSPITALS AND ASYLUMS OF THE BRITISH EMPIRE.

PRETORIA HOSPITAL.

POSTERIOR BASIC MENINGITIS, WITH TRISMUS AS A PROMINENT SYMPTOM: RECOVERY.

(By J. F. JEFFERIES, L.R.C.P., L.R.C.S.Edin., L.F.P. and S. Glasg., Resident Physician.)

THE patient in the following case, a child aged 1 year 7 months, was admitted to the hospital on December 12th, 1910, with a history to the effect that about a fortnight previously she had fallen on the head. This produced no symptom calling for attention, but about a week after she had an attack of vomiting and diarrhoea. The former only lasted a day, the latter persisted for a week.

[1] April 15th, 1911, page 867.

Condition on Admission.—The jaws were firmly locked, and could not be opened—not even under moderate anaesthesia by chloroform. The angles of the mouth were drawn down, producing a typical "risus sardonicus."

Progress.—The child was fed by teaspoonfuls of fluid, which she sucked in between her teeth. She was extremely irritable and restless, and could not tolerate being touched. Well-marked facial paralysis was present on the left side. These symptoms remained unabated until December 18th, when convulsions began, the number and frequency of which can be seen in the following list:

On December	18th	...	...	One convulsion.	
,,	,, 19th	...	...	One	,,
,,	,, 20th	...	...	Two convulsions.	
,,	,, 21st	...	...	Three	,,
,,	,, 22nd	...	...	Two	,,
,,	,, 23rd	...	...	Two	,,
,,	,, 24th	...	...	Three	,,
,,	,, 25th	...	...	Five	,,
,,	,, 26th	...	...	Four	,,
,,	,, 27th	...	...	Three	,,
,,	,, 28th	...	...	Two	,,
,,	,, 29th	...	...	One	,,
,,	,, 31st	...	...	Two	,,

From December 18th onwards the head became more and more retracted. The trismus was very marked for about three weeks, and gave rise to great difficulty in feeding. The muscles of the jaw then gradually relaxed, and the jaws could eventually be separated. With the disappearance of the convulsions and improvement in the general condition of the child the head retraction gradually passed off. Throughout the illness Kernig's sign was present on both sides. The pupils were unaffected, equal in size, and reacted well to light. At no time was there any definite paralytic squint. The hearing was very acute.

Result.—The little patient was much emaciated by her prolonged and serious illness, but rapidly put on flesh as time progressed, and left hospital on February 4th quite well in body and mind. Her temperature on admission was 99° F. in the morning and 100° F. in the evening. This lasted only three days, when it became subnormal, and remained so during the remaining period of the illness. The pulse was accelerated during the stage of activity of the symptoms.

REMARKS.

The previous and family histories were unimportant. The special interests in this case were: (1) The presence of trismus as the first and persistent symptom; (2) recovery.

On admission, as I have said, the jaws could not possibly be separated, and facial paralysis was present on the left side. Six days after, convulsions commenced, so we thought we were dealing with a case of "cephal-tetanus" or head tetanus of Rose, in which trismus is associated with facial paralysis and spasms of the muscles of the body. There was, however, no injury in the region of distribution of the fifth cranial nerve.

Trismus from dental irritation was also out of question, as there was no evidence of such—moreover, the subsequent course of the case proved otherwise.

Trismus as a symptom of posterior basic meningitis is exceedingly rare. On looking up works on medicine I cannot find a single reference to it as a distinct symptom lasting throughout the course of the disease.

Osler says, "There may be trismus or grating of the teeth"; while Batten, in Allbutt and Rolleston's *System of Medicine* (page 178), speaking of tonic spasms occurring in the disease, says, "Exacerbations of this spasm are not uncommon, the jaw and thorax muscles sharing in the contractions," but no mention is made of early and persistent trismus.

Regarding recovery from posterior basic meningitis, Batten says 50 per cent. survive; of this about 15 per cent. recover completely, and the rest are left with hydrocephalus, blindness, or mental defect, varying in degree from increased irritability to absolute idiocy.

The treatment consisted of inunctions of ung. hydrarg. into the groins, axilla, and neck throughout the illness. While the convulsions were on potassium bromide and chloral were given internally, and hypodermic injections of nitro-glycerine and ice to the head and spine. When these ceased, potassium iodide gr. iij was administered every three hours. Warm baths were also given every three hours, and under these marked relaxation of the muscles of the back of the neck occurred.

I have to thank Dr. Savage, Honorary Visiting Physician to the hospital, under whose care this case was, for his kindness in permitting me to publish it.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

BIRMINGHAM BRANCH.

PATHOLOGICAL AND CLINICAL SECTION.

Friday, April 28th, 1911.

Dr. MELSON in the Chair.

A Case of Orbital Aneurysm.

DR. STANLEY BARNES showed a girl, aged 22, who was a lacquerer. About five months ago she noticed one day a somewhat severe frontal headache which lasted two days during which she vomited frequently. Thereafter the eyes began to bulge and the right one became bloodshot, and very soon projected much more than the left. At the same time ptosis of the left eye came on so that she had to use the more prominent right eye for vision. As far as could be gathered there was at this stage considerable limitation of movement of both eyes. After three weeks the ptosis of the left eye disappeared, and since then the patient had noticed no difficulty in using this eye, but the proptosis in the right eye increased, and the headache subsided; since then the headache had still been occasionally felt, but only slightly. For the last four months there had been considerable buzzing in both ears, specially the right. There had been some occasional vomiting at odd times ever since the onset. Her previous history was good excepting that three years ago she had her appendix removed, and the drainage tube had to be left in for some weeks. She was now a somewhat anaemic girl of fragile build, and the right eye was greatly proptosed. Its movements were strictly limited in all directions, the pupil was enlarged, but not fixed to light, and the vision in the right eye was deficient. There was also almost complete left external rectus palsy, but no other sign of interference with this eye. When last examined by the ophthalmoscope, three weeks ago, there was a partial atrophy but no neuritis present. The left eye was normal. Over the right side of the head was a loud bruit synchronous with the heart beat which was heard over the malar and temporal bones best, but which could also be heard in the right mastoid region and over the left side of the scalp.

A Case of Orbital Tumour.

Dr. STANLEY BARNES showed a woman, aged 30, who came up to the hospital first on December 9th, 1910, on account of trouble with her right eye. This had come on gradually for three years with no headache or vomiting. On examination then there was a slight degree of proptosis, and almost complete external ophthalmoplegia. The pupil was of normal size and reacted well, and the optic disc appeared to be quite normal. No other sign of disease could be found, nor did the previous history give any clue to the condition. Since then she had been taking large doses of potassium iodide, but the condition had gradually become slightly worse. In addition to the external ophthalmoplegia, vision had partly failed, the optic disc was paler, and the pupil was now much larger than on the other side, and did not react so well.

Specimen of Vesicular Mole.

Mr. CHRISTOPHER MARTIN showed a specimen of vesicular mole from a woman aged 25, who had been married two years. She had one miscarriage four months after marriage. Her last period occurred in the first week of July, 1910. There was entire amenorrhoea from that date until February 6th, 1911. On that date she began to have small vaginal haemorrhages accompanied by slight abdominal pain. She was sent into hospital under Mr. Jordan as a case of placenta praevia on February 13th, 1911. The uterus reached to the ensiform; there was no fetus palpable and no fetal heart was audible. On February 19th she began to have severe vaginal haemorrhage, and grape-like vesicles could be felt projecting through the external os. The uterus was emptied upon this date of a large vesicular mole, and a fetus somewhat flattened and of pale colour. The fetus appeared to be that of a ten weeks embryo. The specimen showed the usual proliferation of syncytial and Langhans's cells and a very marked oedematous distension of the mesoblastic portion of the chorion. The patient made a good recovery, and when heard of two months later had suffered from no further uterine haemorrhage.

Ovarian Cyst.

Dr. PURSLOW showed a specimen of ovarian cyst which had obstructed labour, and was removed during the puerperium. The patient was admitted to hospital in labour at the seventh month of her third pregnancy. On examination the pelvis was found to be occupied by a cystic swelling, and the os could not be reached. Under anaesthesia the tumour was displaced out of the brim and delivery of a stillborn child effected. The ovarian cyst was removed successfully during the puerperium. The specimen shows a multilocular ovarian cyst the size of a six months gravid uterus, and it was this size which makes the case unusual. It is clear that only part of the cyst could have been in the pelvic cavity. Dr. Purslow said that in his previous experience of similar cases the tumour had been not larger than a fetal head, and had completely descended below the pelvic brim.

Uterus with Large Fibroid Tumour.

Dr. PURSLOW showed a uterus with large fibroid tumour removed by abdominal hysterectomy, rapid recovery ensuing. The specimen, which weighs 12 lb., shows a large fibroid growing from the anterior wall of the uterus; the latter is not enlarged. The tumour deeply invaded the broad ligaments.

Congenital Dilatation of the Colon.

Dr. GAVIN S. BROWN showed (for Dr. SHORT) a specimen of congenital dilatation of the colon from a child 3 years of age.

Excised Perforated Gastric Ulcer.

Mr. BILLINGTON showed a specimen of excised perforated gastric ulcer. The patient was a girl, aged 21, who had suffered from acute dyspepsia for several weeks prior to the perforation of the ulcer. Operation was carried out nineteen hours after the onset of acute symptoms. The ulcer, which was situated on the anterior surface of the stomach near the lesser curvature, was excised widely; the peritoneum was irrigated with normal salt solution and drained. Convalescence was uneventful, the patient leaving the hospital on the nineteenth day with the abdominal wounds firmly healed.

Excised Perforated Duodenal Ulcer.

Mr. NUTHALL showed the specimen of a perforated duodenal ulcer excised from a man, aged 42, about twenty-four hours after the probable time of occurrence of perforation. The ulcer—a small one—was situated on the anterior wall of the duodenum, less than 2 in. from the pylorus. After excision, the wound was closed in the line of axis of the bowel, and a flap of omentum sutured over it. Recovery ensued. The patient suffered with severe epigastric post-prandial pains for three months before perforation occurred, vomiting at times, but with no haematemesis or melaena.

THE eleventh annual report of the Westmorland Consumption Sanatorium and Home has just been issued. The sanatorium comprises two distinct branches—the sanatorium proper, set apart for milder cases, who sleep in open shelters and are able to work, and the home, used for severer cases not fit for work, who sleep in single or double wards. The average number of beds occupied throughout the year was 66, as against 54 in 1909. The average weekly cost per bed was 29s.; it is slightly higher than in the four preceding years, but is a very moderate rate. Since the opening of the sanatorium eleven years ago, 1,100 patients have been admitted, and there are elaborate tables appended, following up the histories of those admitted from Westmorland. Of the advanced cases only 15 out of 90 admitted remained alive; of the moderately severe cases about 60 per cent. are in good health, 20 per cent. frail, and 20 per cent. dead; of the slight cases, about 90 per cent. are in excellent health, very few are doing badly, and only one has died in eleven years.

Reports of Societies.

THE ROYAL SOCIETY.

Thursday, May 4th, 1911.

Sir ARCHIBALD GEIKIE, K.C.B., President, in the Chair.

Motor Localization.

A PAPER by Dr. F. W. MOTT, F.R.S., Mr. EDGAR SCHUSTER, and Professor C. S. SHERRINGTON, F.R.S., on the motor localization in the brain of the gibbon correlated with histological examination, was read. A comparative study of the convolutional pattern of the brains of lemurs and apes led to the expectation that the remarkable use the gibbon makes of its arms and hands would be found by experiment and histological investigation to be correlated with the remarkable expansion of the cortex cerebri in the precentral region, as shown by the development of a broad gyrus extending from the middle of the precentral region to form the second frontal convolution. This development, it was inferred, would push downwards and forwards that portion of the cortex which on stimulation gives rise to eye movements in macacus. Stimulation experiments by unipolar excitation, showing the correctness of this deduction, were described in detail, and for the first time the excitable motor cortex was precisely mapped out in this animal. The experimental observations had been correlated with a histological survey of the cortex cerebri in front of the central fissure. Figures were shown illustrating the distribution of two quite distinct types of cortex in the lateral surface of the gibbon's brain in front of the central fissure corresponding to Campbell's precentral and intermediate precentral types, or to Brodmann's types 4 and 6. The great forward extension of the intermediate precentral area (especially that which may be described as the middle frontal convolutions) forms a most characteristic feature of the gibbon's brain, and distinguishes it in a very striking way from the orang and chimpanzee on the one hand, and cercopithecus and the baboon on the other.

Cancerous Heredity.

Dr. J. A. MURRAY, M.D. (Imperial Cancer Research Fund) made a communication on cancerous ancestry and the incidence of cancer in mice, in continuation of a previous communication. The analysis of the ancestry of 1,600 mice bred in the laboratory permitted their classification in two groups differing considerably in the incidence of cancer. Out of a total of 562 female mice which lived for six months or more, cancer had occurred in the mother, one or other grandmother, or all three in 340, and in them 62 developed cancer of the mamma (18.2 per cent.). In the remaining 222 mice, in which cancer was absent from the maternal and grandmaternal ancestors, only 19 developed cancer of the mamma (8.6 per cent.). The group with recent cancerous ancestry was found on analysis to be more severely attacked at all age-periods than the non-cancerous group (cancerous ancestors remote). Detailed analysis of the ancestors enhanced the importance of the differences. The differences exceeded their standard errors sufficiently to render them significant. The predisposition was apparently not constitutional, but local, and was regarded as only one of the factors in the development of cancer.

Immunization by Endotoxins.

Dr. R. TANNER HEWLETT read a paper giving the results of an investigation of the action of bacterial endotoxins in immunizing against the corresponding living organisms. Guinea-pigs were the animals employed. (1) A series of guinea-pigs were given single injections of typhoid endotoxin, ranging from 0.01 mg. to 1.0 mg. Five to eleven weeks later the animals were injected with living typhoid culture; considerable protection was obtained, particularly with doses of 0.1 mg. and 1.0 mg. The protection afforded by the endotoxin was better and lasted longer than that conferred by a bacillary typhoid vaccine. (2) Six guinea-pigs each received 0.25 mg. of the cholera endotoxin, and all survived an injection of living cholera culture given eleven weeks later. (3) Diphtheria and (4) plague endotoxins similarly conferred some protection against the living organisms. (5) No immunizing substance was obtained from the *Trypanosoma brucei*. The results suggested that bacterial endotoxins might be of considerable value as protective vaccines. The endotoxin solutions maintained their activity for some weeks at least, probably for a much longer period. A few inoculations of typhoid and diphtheria endotoxins had been performed in the human subject. The inoculations caused some local reaction at the site of inoculation, but little general reaction.

Artificial Disintegration of Bacteria.

Mr. J. E. BARNARD and Dr. R. T. HEWLETT, in a paper on a method of disintegrating bacterial and other organic cells, pointed out that bacterial toxins were of two kinds, extracellular and intracellular. The former were excreted into the medium, for example beef broth, on which the organism was cultivated, so that by a process of filtration the organisms could be removed, and the toxin obtained in the filtrate; but the majority of pathogenic micro-organisms did not excrete their toxins, at least to any extent, and the toxins were retained within and formed integral parts of the cells of the organisms. One method of obtaining these toxins was to disintegrate the bacterial cell mechanically, so that the cell contents were expressed, and an apparatus to accomplish this was described. It consisted essentially of a containing vessel, in which, by a suitable rotation of steel balls, the organisms were crushed. The principal conditions to be fulfilled in such an appliance were: (1) Approximately every cell should be brought under the grinding action. (2) Little or no rise of temperature should take place. (3) The disintegration must be carried out in a vessel which was sealed, so that, when dealing with pathogenic organisms, none could escape at any stage of the process. These conditions were, in the main, complied with in the apparatus described. Experiments indicated that by this method the cell-juices were obtained unaltered, and suitable for investigations on the chemical composition and properties of the bacterial proteins and other cell constituents. Also that, after the grinding process had been carried on for a sufficient time, practically no cells remained which could be properly stained by any recognized bacteriological method, and which therefore could be regarded as whole cells containing a normal quantity of cell-juice.

MEDICAL SOCIETY OF LONDON.

Monday, May 8th, 1911.

Mr. CHARTERS J. SYMONDS, President, in the Chair.

Salicylates in Rheumatic Affections.

DR. A. F. VOELCKER, in a paper on the limitations to the successful employment of salicylates in rheumatic affections, said that it had become a habit to treat all rheumatic affections with the salicylates. Certain of them responded admirably, but there were also quite a number of undoubtedly rheumatic manifestations in which the salicylates proved useless. The most striking benefit of the salicylates was shown in their influence on joint pains, and persistence of pain after adequate administration should always suggest the possibility of the arthritis being gonococcal or septic in nature, or to the pain being due to an anterior poliomyelitis. The pain of acute rheumatic arthritis ought to yield within twenty-four hours to the administration of 10 grains of sodium salicylate with 20 grains of sodium bicarbonate, given every two hours for three doses and then every four hours. Pains about fibrous structures after an acute arthritis were often intractable to salicylates, but yielded to local applications of oil of wintergreen or to potassium iodide internally. The pain of pleurisy and of pericarditis was uninfluenced. Joint effusions when aggravated by movements proved intractable, even when they contained the *Diplococcus rheumaticus*. The pyrexia of acute polyarticular rheumatism was generally controlled within three days, but in the rheumatic state there was often a pyrexia ranging through two degrees, which continued even for weeks, and was unaccompanied by any obvious manifestation of rheumatism. Such pyrexia was often uninfluenced by the salicylates, though it might yield to salol or aspirin. The employment of the salicylates in rheumatic hyperpyrexia was waste of valuable time. The cutaneous manifestations of rheumatism were uninfluenced. Neither

the various forms of erythema, purpura, nor erythema nodosum appeared to be influenced, and these manifestations had occurred while patients were actually taking the drug. The subcutaneous nodules described by Barlow and Warner were undoubtedly rheumatic in nature, but they were quite uninfluenced by the administration of the salicylates. He had failed to find any successful treatment for them. The similarity of their structure to that of the inflamed valves of the heart in rheumatism, as pointed out by Cheadle, was a powerful argument against the utility of the employment of salicylates in endocarditis or pericarditis. The danger of upsetting the stomach with the irritant salicylates must be borne in mind in the treatment of all heart affections, as also must the risk of acidosis. In the treatment of chorea the salicylates had proved of no use in his experience. The object of his paper was not to belittle their good effects, but to point out that salicylates were not specifics for any and every affection termed rheumatic.

ROYAL SOCIETY OF MEDICINE.

Section of Surgery.

Tuesday, May 9th.

Mr. Rickman J. Godlee, President, in the Chair.

Cleft Palate.

An exhibit of a large number of cases of cleft palate, operated upon by different methods, was followed by a debate opened by Mr. Arbuthnot Lane, who developed his well-known views as to the necessity for operating upon the palate in earliest infancy; his youngest patient was seven hours old. Severe deformity was, in his opinion, an indication of urgency, and closure of the cleft a life-saving measure. He held that the flap method was the only one adequate for closure of the worst cases, and to obtain adequate flaps operation must be performed before the teeth erupted. Dr. Ulrich, of Copenhagen, described his technique, and showed his instruments, including a screw compressor for approximation of the maxillae in his modification of Brophy's operation. He alluded to the conditions obtaining in Denmark, which resulted in many cases being treated by prosthesis and tuition, rather than by operation. The great majority of his cases were operated on by Langenbeck's method, and his results were very satisfactory. He communicated a series of 10 consecutive cases operated upon in infancy by the Brophy method. There were two deaths, and only two entirely successful cases in the series. Whilst it was theoretically desirable, for the best functional results, to operate as early as possible, the operation was much easier at two years, and healing much more readily attained. Whilst there were cases suited for approximation of bones, it was not a justifiable routine measure. The President intimated the opinions of Mr. Murray (Liverpool) and Mr. Edmund Owen. The former practised exclusively Langenbeck's operation, whilst the latter advocated Brophy's. Mr. Drew admitted that Mr. Lane's work had influenced him in the direction of earlier operation, but he very rarely operated in the first year of life. His objections to the flap method were that it was a dangerous operation, and one involving so much cicatrization as to impede movement of the palate. Examination of the cases shown convinced him that the Langenbeck method was superior from every point of view. His only experience of the Brophy method taught him that the approximation of the maxillae was accompanied by so much tilting upwards of the palatal process as to increase considerably the difficulty of closing the cleft. If the lip were operated upon first, the cleft was much reduced by the time operation was indicated. He drew attention to the superiority of Berry's double-shouldered needle, and showed a special gag. Mr. Fagge had operated upon 38 cases under 3 months old. There were three deaths. The flap method was the only one for very difficult wide-cleft complete cases, and should be undertaken before the end of the first month. The harelip should be repaired at the same time as the palate. Mr. Berry had operated on 144 cases. He had had no death. He had never come across a case with a cleft too wide for cure by Langenbeck's method, nor any condition referable to the deformity for which that operation was inadequate. The youngest patient he had operated upon was 4 months, the oldest 26 years. He considered 2 years the best age, and 16 years as the latest period at which good results could be expected, though he had done some 6 cases above that age. He doubted the claim that the operation in infancy was "life-saving," and had never seen any data to support it. He found that the cleft was enormously reduced by operating on the lip first. Brophy's operation was good in theory, but too dangerous in practice. He wished to learn whether the atrophy of the flaps that he had seen several times after operation by Lane's method was a frequent occurrence. After-training and regulation of the teeth were important points if good functional results were to be obtained. Mr. Waugh pointed out that there was no close relation between the degree of the original cleft or the mechanical perfection of the result and the perfection of speech. The vast majority of cases, by whatever method treated, retained through life a nasal intonation—a point which ought to be placed clearly before parents when operation was proposed. The hereditary considerations brought cleft palate into the category of eugenic problems. Mr. Burghard agreed that functional results were unsatisfactory at the best. The cases present demonstrated the superiority of Langenbeck's method. His experience with the Brophy and flap operations was disappointing; on the other hand, he had never met with insurmountable difficulty in any case by the older method. He had not observed any excessive mortality amongst cleft palate cases not operated upon, and did not believe the early operation was rightly described as "life-saving." Mr. Kellock thought slight cases might be tackled early, but complete clefts were better left till later. His objection to the flap method was the resulting obliquity of the palate and its tension. He had observed that in cases left alone the width of cleft was diminished with development of the bones. It was important to train the child before the operation, as well as after. Mr. Barrington Ward read a paper based on 369 operations performed by Mr. Lane on 172 cases, with 5.9 per cent. of deaths. Mr. Spencer spoke of 14 cases operated on by flap and approximation measures with 1 death. He had found some very bad cases do well. Mr. Pollard's experience, intimated by the President, was in favour of Langenbeck's operation, which had never failed him. Mr. Lane replied, leaving his case in the hands of those who had seen the patients exhibited.

Laryngological Section.

At a meeting on May 5th, Dr. Watson Williams, President, in the chair, a discussion was held on the present position of the treatment of purulent discharge from the frontal sinuses. Cases and skiagrams illustrating the frontal sinuses and frontal sinus operations were shown by Dr. StClair Thomson, Mr. Herbert Tilley, Dr. Moore, Mr. Stuart-Low, and photographs and diagrams illustrating the same subject were thrown on the screen by Dr. Watson Williams. The discussion was opened by the President, who submitted an abstract to the meeting, pointing out that the subject of discussion fell under two main headings—namely, the treatment of acute and chronic cases of frontal sinusitis. In acute frontal sinusitis reliance was largely placed on treatment by diaphoretics, counter-irritation, Bruning's light head bath, and intranasal lavage and local sedatives; but in certain cases operative measures were necessary, either intranasally or externally. As regards chronic frontal sinus suppuration, intranasal treatment by lavage should be tried, combined with the dealing with coexisting pathological conditions in the nose. Nitrate of silver and protargol as local applications were useful in some cases. Vaccines rarely effected a cure. Intranasal operations, with a view to enlarging the fronto-nasal passage, were practised and advocated by some. The Roentgen-ray screen was of use in diagnosis in some cases. In a large proportion of cases the fronto-nasal duct was abnormally patent, and free drainage was not always sufficient to effect a cure. If maxillary antral empyema or purulent discharge of the posterior ethmoidal cells or sphenoidal sinus coexisted, these, as a rule, should be opened up and treated before resorting to any external operation. The particular type of operation must be determined by the nature and conditions of the individual

case, but one should adopt a method which allowed free access to the whole of the involved territory and ultimate obliteration of the suppurating cavities with the least deformity. In the discussion which followed, the opinion generally expressed was that there was now a distinct tendency to avoid external operations on the frontal sinus as much as possible, and that the number of cases operated upon by the external route was decidedly smaller than formerly, one reason being that the osteomyelitis which sometimes ensued as the result apparently of these operations had proved almost invariably fatal.

EDINBURGH OBSTETRICAL SOCIETY.

Wednesday, May 10th, 1911.

Dr. HAULTAIN, President, in the Chair.

Diffuse Adenoma of the Vagina.

THE PRESIDENT read a communication on a case of diffuse adenoma of the vagina which had first come under his notice fifteen years ago, and showed microscopic sections of the growths.

The patient, at that time 35 years of age, complained of a watery vaginal discharge. A hard tumour of the size of a walnut protruded from the vulva, and the vaginal walls were pink and freely secreting. The tumour was removed, and found to be a fibro-adenoma. Part of the vaginal wall, which was covered with adenomatous structures resembling cervical erosions, was scraped and swabbed with tincture of iodine. Some months later the curettage was repeated and pure carbolic acid applied, and the same measures were carried out a third time. The relief in each case was only temporary, and douching with astringents had little or no effect. Fifteen years later, in June, 1910, she returned complaining of severe heat in the vagina. The walls were now greatly thickened, pink, and studded with warty processes. These were still adenomatous, but they had now undergone a malignant change—adenoma malignum. The watery discharge had been profuse for the preceding eight years. The patient gradually weakened and died.

From his experience in this case the exhibitor said he would in future recommend radical treatment by removal of the uterus and vagina. A similar case had been recorded last year by Dr. Bonney. Dr. BERRY HART gave an explanation of the etiology of the condition just described by the President, and illustrated his remarks by lantern slides. In a transverse section of the genital cord at the seventh week, two Müllerian ducts were present. Later the septum between them disappeared, and the duct, now single, ended blindly in a projection, the eminence of Müller. At this stage no hymen nor any lower opening was present. At the fourteenth week a central mesial section showed the lower end of the cervical canal blocked with epithelium, the vagina solid with epithelial cells, and at its lower end two bulbs, of squamous epithelium, the Wolffian bulbs, which led up to the Wolffian ducts. It was these bulbs that proliferated and projected their stratified squamous epithelium along the Müllerian vagina, replacing the original cylindrical epithelium. According to the speaker the fused Müllerian duct gave rise to the upper two-thirds of the vagina, the lower third belonged to the uro-genital sinus, while the hymen was the thinned-out lower ends of the vaginal walls. The epithelium of the whole vagina and the lower third of the cervix was formed from the epithelium of the Wolffian bulb. When the Wolffian epithelium was not projected along the Müllerian duct, and the columnar epithelium persisted, then adenoma of the vagina arose.

Superfetation.

A note of a case of superfetation by Dr. A. E. TURNBULL was communicated by the SECRETARY. The patient was a primipara, 24 years old, and her pregnancy was supposed to have reached six and a half months when labour set in. She was delivered of twins, there being one placenta and hydramnios of the second sac. Then a third ovum, apparently 3 months old, was expelled. Dr. HART said this was not proved to be a case of superfetation. In multiple pregnancy the difference in the size of the embryos might be great, according to the placental area that each obtained. Dr. RITCHIE described a case of which he had recently read. Dr. B. P. WATSON thought that in this instance two ova had been fertilized, one giving rise to twins and the other to a single embryo which had died at the third month, and had retained its freshness while it lay in the uterus.

Exhibits.

The PRESIDENT showed photographs of an oedematous fetus, of which the mother was also oedematous; extra-uterine pregnancy with perforation of the uterus by a curette.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday, May 5th, 1911.

Dr. PHINEAS S. ABRAHAM, President, in the Chair.

X-Ray and Radium Treatment of Malignant Disease.

Dr. REGINALD MORTON, in a paper on the present position of the *x*-ray and radium treatment of malignant disease, said that it was impossible to predict with even a small degree of accuracy how any given case was going to respond to *x*-ray or radium treatment, and quoted cases of an identical nature that gave opposite results though treated in exactly the same way and with the same apparatus. Looking back over a period of ten years, he found that some of his most successful cases had been treated in the earlier days before measurement and the use of filters came into use and when the production of a more or less mild degree of *x*-ray dermatitis was comparatively common during the progress of the treatment of cases of this kind. The most strikingly successful case in his experience had been treated with a series of massive doses which were followed by a very intense dermatitis. Summing up the present position of matters, he said that the *x* rays had a definite inhibitory action on all cellular growths when applied strongly and for a sufficient time, and under favourable conditions would bring about their destruction and removal. This, however, did not take place to any appreciable extent after the rays had traversed a certain thickness of tissue—namely, about 1 cm. Cancerous and other diseased cells, being of lower vitality than normal cells, were more easily destroyed than the latter, and for this reason they could be affected at a greater depth. The prospects of bringing about a definitely favourable influence upon any case were directly dependent upon the thickness of the growth; if more than half an inch thick and advancing, *x*-ray treatment was not likely to do very much good. Pain when present was relieved in nearly all cases. He was a strong believer in post-operative *x*-ray treatment as a routine measure, but would go even further than was usual. With modern apparatus it was now possible to administer a full therapeutic dose in less than five minutes. This made it feasible to treat the operation area in the theatre before the surgeon closed the wound, and such an application would have more far-reaching results than a number of applications given some time after the operation. Prophylactic *x*-ray treatment should be carried out at intervals of three months during the first year and at longer intervals during the second and third years. The principles involved in radium treatment were the same as in *x*-ray treatment, but the advantage of radium was that it could be applied to parts inaccessible to the *x*-ray tube, and that the radiation from any given specimen was constant and definite. Owing to the limited supply it was not so good as the *x*-ray tube for treating severe cases of an extensive character. Neither method afforded control over metastasis, and recurrence was not influenced whatever the method of treatment employed. If operation was feasible it should be done in all cases and without delay, but post-operative *x*-ray or radium treatment should also be commenced immediately afterwards. If this were done in all cases the percentage of recurrences would fall off. If it was decided that a case was inoperable, then *x*-ray or radium treatment should be tried at once and carried on for at least one month, by which time there ought to be some definite indications as to any good resulting therefrom. Even at the worst the patient was made more comfortable both physically and mentally. Dr. ABRAHAM remarked that he had seen a specimen from a case of malignant disease of the breast cured by *x* rays; on section nothing but fibrous tissue was left. Dr. C. E. IREDELL said it was impossible to tell from a microscope examination if a given section had been *x* rayed or not. In discussing radium the quantity used was of great importance. He had better results with 22½ mg. than with smaller amounts. He believed radium was more

likely to cure cancerous masses than *x* rays. Dr. C. J. MORTON had seen a recurrent carcinoma grow to the size of half a Tangerine orange in three weeks and disappear under radium in a fortnight. The only guide as to which cases would benefit with radium was to give a trial. Mr. MCADAM ECCLES was sure that immediate post-operative administration of *x* rays was a sound procedure.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

AT a meeting on May 5th, Professor MUIR, President, in the chair, the following were among the exhibits: Dr. T. K. MONRO: A man who had recovered from an attack of *Landry's paralysis*. The illness began on October 14th, 1910, with weakness at the right knee, twitchings in both legs, numbness and prickling up to the knees. On October 17th the upper limbs were similarly affected; by October 20th he was unable to stand or walk, and had severe pain in the legs. On admission to the Royal Infirmary, on October 21st, there was noted, in addition to weakness and flaccidity of muscles, absence of plantar and deep reflexes, impaired sensation, and normal electrical reactions. During the first week of November he had incontinence of faeces, retention of urine, and delirium. By November 10th there was some return of power in the arms, and by 16th slight return in the legs. Improvement continued, till by December 24th the patient could stand without assistance and left the infirmary. Examined on May 5th, 1911, the patient was found to have both knee-jerks present, though reduced, and, but for occasional slight numbness in the toes, was in perfect health. Dr. J. H. TEACHER (for himself and Dr. MADGE E. ROBERTSON): Sections of the spinal cord and posterior root ganglia from a case of fatal *Anaemia* in a man aged 54. Those from the lower dorsal region showed a peculiar degeneration, the myelin sheaths being swollen and staining black by Marchi's method. On one side this change affected the crossed and direct pyramidal and pre-pyramidal tracts, and anterior and lateral basis bundles; on the other side, parts of basis bundles and direct pyramidal tract had escaped. The posterior columns were affected in a small area in front of one column of Goll. The ascending cerebellar tracts were clear on both sides. There were distinct degenerative changes in the ganglion cells generally, specially in lower dorsal region. The upper limits of the degeneration were not ascertained. It was absent from lowermost dorsal and lumbar segments. Mr. ARCH. YOUNG: A specimen of *Intussusception of the appendix* from a child aged 4½ years. The boy had suffered for about two weeks from severe abdominal pain, referred to the umbilicus, recurring at intervals of half an hour. No sickness, vomiting, or passing of mucus or blood. No swelling or tenderness anywhere in the abdomen. The patient's doctor, regarding the pain as probably due to colic caused by chronic constipation, had prescribed aperient medicine and enemata of olive oil, but without relieving the pains. Subsequently the child was admitted to Broadstone Jubilee Hospital, Port Glasgow, and after operation made an excellent recovery. The same exhibitor described an instance of the same condition in a woman aged 24. She was admitted with symptoms of appendicitis of forty-eight hours' duration, sickness, vomiting, pain; temperature 102° F., pulse 116, rigidity of abdominal wall in right iliac region, local tenderness, and a palpable mass in the appendix region.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

NORTHERN AND MIDLAND DIVISION.

AT a meeting on April 27th, at the City Asylum, Nottingham, Dr. POWELL in the chair, Dr. ERSKINE, in a paper on *Asylum dysentery*, discussed the various factors which favoured it. In addition to overcrowding, constipation, the dirty habits of the insane, and the possibility of there being dysentery carriers, he called attention to three others: (1) The presence of kidney disease rendered a patient more liable. He had noticed a peculiar slimy condition of the peritoneal surfaces of the intestines in kidney disease. Probably the extra work of excretion thrown upon the bowels in these cases had something to do with their liability to dysentery. (2) Tuberculous cases were liable to dysentery and became more dangerous as sources of infection of dysentery than of tuberculosis. (3) He had been struck by the fact that influenza and colitis had been epidemic in the asylum at the same time, and that three annual epidemics of colitis had followed three annual influenza epidemics. He therefore submitted that some cases of so-called asylum dysentery were really influenza, and, further, that influenza was a cause of asylum dysentery. He then gave a history of the cases of dysentery occurring in the Nottingham Asylum for several years past, and showed their relation to outbreaks of influenza. In the discussion which followed some doubt was raised as to the relationship between influenza and colitis. A query was put forward as to whether the turning up of new soil, in digging foundations, had any connexion with outbreaks of colitis. Dr. DEVINE, in a paper on the *Pathogenesis of a delusion*, described a case in which a young lady had developed the delusion that she was suffering from an infectious disease, and that those around her were in danger of becoming affected. A psycho-analysis was undertaken to trace the source of this delusion. By means of Jung's association experiment it became manifest that underlying the delusion was a concealed complex giving rise to feelings of shame and self-reproach. This was found to depend on an experience with her lover a short while before. She accused herself of having acted wickedly. Since, however, her behaviour had not been open to criticism it became obvious that her self-accusation was itself a delusion covering a deeper complex. Further analysis revealed the fact that the patient had determined to avoid marriage on the ground that she had an insane heredity. The psychosis had therefore arisen out of two conflicting wishes: (1) Natural sex instincts, and (2) a wish to remain single. The delusion was the symbolic representation of her original determination and enabled the patient to gratify her ideals and solve the conflict in a manner impossible in contact with reality. The analysis was also a method of treatment, a form of re-education. As the mechanism became obvious to the investigator it was possible to lead the patient back to reality once again. Dr. ALLEN recorded a case of *Gangrenous emphysema of the thigh*, occurring in a general paralytic.

ASSOCIATION OF REGISTERED MEDICAL WOMEN.

AT a meeting on May 2nd, Mrs. DICKENSON BERRY, President, in the chair, Dr. MILDRED BURGESS read a paper on *Some functional conditions of the circulation*, basing her remarks on cases met with in private practice. They fell into three groups: (1) Those with raised blood pressure; (2) those with lowered blood pressure; and (3) those with definite physical signs in the heart or blood vessels, imitating valvular or arterial lesions. (1) Patients in the first group—often young women—complained of headache, fatigue, wakefulness, and restlessness. They had a high tension pulse (blood pressure 150 to 160 mm.), and the urine was of low specific gravity. The cause of the condition appeared to be tea drinking or constipation. (2) In Group 2 there were attacks of fatigue almost amounting to powerlessness, in which the patients became prostrate, grey, with shallow respirations and a slow pulse. They were conscious, but unwilling to talk or move, and had a sensation of impending death. The attacks lasted from one to five minutes, and ended suddenly. The possible explanations of these cases were either that after excessive fatigue the heart refused to work at the normal rate, or that the blood collected in the splanchnic area and the heart was unable to drive the blood through the dilated vessels. The change was probably vagal in origin. (3) A patient in Group 3 complained of chestache. The heart sounds were irregular, with reduplication of the first, and sometimes of the second, sound. A rough systolic murmur was heard at intervals. The heart was not enlarged. The pulse was slow, the blood pressure 150 mm. The condition was probably a later stage of that described under Group 1, and was obviously functional, as it cleared up with treatment. In all groups trinitrin was the best drug to give. In Class 2 it could be combined with digitalis and strychnine. Cases in Class 1 benefited by a mixture of potassium iodide, potassium bromide, and tincture of nux vomica. Tea and red meat should be prohibited.

For the constipation oil injections combined with massage were the most efficacious. Dr. CONSTANCE LONG read the *Notes of a case of paroxysmal tachycardia*. The patient was a married woman, aged 38, who had suffered from attacks of tachycardia since the age of 14. The speaker described one of the severe attacks. It was preceded by diarrhœa and vomiting, and then the pulse-rate rose rapidly to 160, and later to 200, per minute. The breath was sweet and heavy, and the bowels became constipated. From the second day there was cyanosis; the area of cardiac dullness increased in size, and the patient complained of aching in the precordial region. There was some œdema of the lungs. On the tenth day the heart's action slowed to 160, and then, with a jerk, to 88 per minute. A few hours later it rose again to 160, then dropped to and remained at 88. The patient was weak and tremulous for a week or two. Some attacks were much shorter, and then recovery was more rapid. Numerous remedies had been tried without effect. Of drugs, only digalen and heart tonics appeared to be of any use. Two recent attacks seemed to have been shortened by the application of a tight abdominal binder over a pad.

THE NEW LONDON DERMATOLOGICAL SOCIETY.

AT a meeting on May 11th, Dr. P. S. ABRAHAM, President, in the chair, the following were among the exhibits: Dr. G. NORMAN MEACHEN: (1) A man with *Lichenoid pigmentation* beneath both axillæ; (2) a married woman with *Acne varioliformis* upon the forehead and chest. Dr. KNOWSLEY SIBLEY: A woman with severe pitting of the face after small-pox, which had been successfully treated by hyperæmia with suction cups, hypodermic injections of fibrolysin, cataphoresis with a 2 per cent. sodium chloride solution, and a 10 per cent. thiosinamin solution, and small repeated doses of *x* rays. A photograph of the original condition was shown. The PRESIDENT: (1) A man, aged 39, with *Mycosis fungoides*, in which there was extensive eczematous inflammation of the shoulder, ulceration of the arm, and a nodular mass in the left groin, which latter had practically disappeared as a result of *x*-ray treatment. He had recently received an injection of "606"; (2) a woman with *Epithelioma of the cheek* developing upon lupus of the face; (3) A little girl with ringed nodular lesions upon the left forearm suggesting the diagnosis of granuloma annulare. Dr. AGNES SAVILL: A married woman with *Lichen plano-pilaris* of the "white papule" type (Crocker), occurring upon the upper part of the chest and the back of the scalp. The condition had been verified microscopically. Dr. DAVID WALSH read notes of a case of osmium vapour rash occurring in a platinum worker, the face having been severely affected with small, reddened, circumscribed patches a week after being exposed to the fumes of osmium. The case was in all probability a unique one. He also showed a man with a psoriasiform patch upon the forearm presenting a dentated, almost keloidal, margin.

UNDER the will of the late Mr. John Spencer of Wednesbury, the University of Birmingham receives a bequest of £5,000, which is to be applied for the advance of science and in the working out of scientific problems in any department of science. Under the same will the West Bromwich District Nursing Association receives £1,000.

THE sixth annual report of the British Institute of Social Service relates to the year 1910. It shows that financially the undertaking is holding its own, and that the number of applications for information addressed to it are steadily increasing, as also is the income obtained from the sale of the society's publication, *Progress*. The object of the society, it should be noted, is to collect, register, and disseminate information relating to all forms of social service, in order: (1) To make such information available to all concerned in the improvement and elevation of our national life; (2) to promote the initiation and development in this country of the most beneficial and successful forms of social service; (3) to give assistance to all organizations that have social aims, and to facilitate co-operation between them, and, as far as possible, to prevent overlapping. The home of the society is 4, Tavistock Square. The President is the Earl of Meath, and its Honorary Secretary Mr. A. K. Maynard.

Reviews.

THE SURGERY OF CHILDREN.

MR. J. KEOGH MURPHY has done the English-speaking portion of the medical profession a distinct service by publishing an excellent translation of Professor KIRMISSON'S *Précis de chirurgie infantile*.[1] In his preface the distinguished French clinician says that he has no inclination to present a book "whose aim is to include in the smallest bulk the greatest possible amount of material that can be crammed into it." Such a work suits neither "his taste nor his years." But he wishes "to present to the medical public something that will be really useful, to insist on knowledge of those things which are essential in practice—symptoms, diagnosis, and treatment." He regards the surgery of children as specially practical in character, in so far as the practitioner may at any moment be called upon to deal with hip-joint disease, fractures about the elbow, retropharyngeal abscess—and he does not here concern himself with the great operative procedures of abdominal surgery. He further points out that two main subjects dominate infantile surgery—the study of malformations and diseases connected with the apparatus of locomotion. So, naturally, a large portion of the book deals with these two subjects.

The section dealing with malformations is exceedingly well written, and is at the same time very fully illustrated, forming therefore an excellent account of this important department of the surgery of childhood. In some of the subjects dealt with the treatment recommended is not quite up to date. And it is here that we acknowledge the work of the translator, for he has added numerous notes to supply the deficiency in the original text. For example, in the chapter on cleft palate Professor Kirmisson makes no mention of the recent work of Arbuthnot Lane and Brophy, but Mr. Keogh Murphy amply makes up for the omissions, both in letterpress and in illustration. Professor Kirmisson adheres to the opinion that cleft palate should not be operated on before the fourth year, although he quotes Julius Wolff of Berlin, who has done the operation repeatedly between the first and sixth month in two stages—cutting and dissection of the flaps first, and then five or six days later suturing. Other chapters in this section on malformations will well repay perusal. It is not easy to particularize, but we think that those dealing with congenital cysts of the head and neck and with congenital dislocations of the hip are quite the most informing and the most thorough presentations of these subjects we have met with.

In the British Isles tuberculosis bulks largely, indeed predominantly, in the causation of surgical diseases of children. In France the same experience seems to prevail, if we may judge by the large amount of space Professor Kirmisson gives to tuberculous disease of bones and joints. The chapters devoted to this all-important department are full; but they are never tedious and uninteresting. The reader feels that he is reaping the benefit of a rich experience, and that the author is setting forth that experience, adopting for his method what some of our politicians are fond of calling the process of thinking aloud. There are many points which might be criticized, but the value of the work lies in its personal character. The chapter on Pott's disease (we are interested to note that this designation is used throughout, an acknowledgement of a great English surgeon's name) is most instructive. But we are surprised to find the statement that "the actual cause is infection by the tubercle bacillus, hereditary or acquired"—the direct transmission of the tubercle bacillus from parent to offspring is not sufficiently frequent (if it ever occurs) to warrant this statement being taken literally. The author directs that a plaster of Paris jacket for Pott's disease should be applied with the patient lying on his back in bed, and that the pelvis and thighs should be included so that he may not walk about. The object is to ensure absolute immobility. Before

[1] *A Handbook of the Surgery of Children*. By E. Kirmisson, Professor of the University of Paris; Surgeon to the Hospital for Sick Children, etc. Translated by J. Keogh Murphy, M.C.Cantab., F.R.C.S., Surgeon, Miller General Hospital for South-East London; Senior Assistant Surgeon, Paddington Green Children's Hospital. London: Henry Frowde, Oxford University Press, and Hodder and Stoughton. 1910. (Med. 8vo, pp. 834; illustrated. 20s.)

permitting the patient to assume the upright position we should go carefully through the different symptoms—sensibility of trunk, presence of pain, presence or absence of tracking abscesses, and so on. Then, after these have been excluded, radiography may show the presence of a shadow round the spine. He is most strongly opposed to the method of forcible straightening a deformity of the spine. "The results have appeared to me deplorable, more particularly those cases in which, after having forcibly reduced the deformity, division of the spinal transverse processes and laminae has been performed; for not only have these unfortunate patients had considerable deformities, but they became cyanosed and suffered from intense dyspnoea." The treatment of tracking abscesses (psoas, lumbar, etc.) recommended is by puncture, aspiration, and injection of ether and iodoform (10 per cent.), performed with strictest asepticity, and before the abscess has reached the skin while it still is deep.

In the chapter on tuberculosis of the bones and joints of the limbs we find the author to be a strong advocate of the conservative methods now so much in vogue. His methods differ in some degree from those practised in this country, and we have some difficulty in apprehending the pathological reasoning on which some of them are founded. "The first and by far the most important of all methods to be used in the treatment of tuberculous joints is absolute rest, not only of the limb, but of the whole patient." He gives Bonnet of Lyons credit for pointing out the necessity for keeping the joint at rest in the "normal position of the joint in repose." No exception can be taken to this principle, but it is otherwise with the following:

> Next comes the application of pressure. This is to be done by elastic pressure over the joint itself. A layer of wool 5 in. in thickness is applied to the anterior surface of the joint, posteriorly is applied a gutter-shaped plaster cast, and a fair amount of compression is made by bandaging. In the later stage elastic pressure with a rubber band round the joint is used.

As the author points out, this has nothing in common with Bier's method, which produces venous stasis in the tissues, while his method is to bring about "anaemia of the joint." "When the tuberculous tissue has assumed considerable growth" cauterization by fine points of the thermocautery, used with the strictest aseptic precautions, is recommended:

> By means of these fine points I penetrate into the joints and into the softened ends of the bones, and make in this way 50, 60, or even 100 points of cauterization in different cases in a single joint. It is necessary to heat the points to a white heat so as to penetrate the tissues as rapidly as possible, thus avoiding the troublesome results of local extension and suppuration.

For the treatment of tuberculous abscesses he prefers the method of puncture followed by injection of ether and iodoform, 10 per cent. He holds that iodoform is better than all other agents, and that the ether, as it passes rapidly into a state of vapour (permitted ultimately to escape through the cannula), expands the abscess cavity, carrying the iodoform with it, so that the iodoform is precipitated as a fine powder within even the furthest pockets of the cavity.

The last point we shall deal with is Professor Kirmisson's treatment of tuberculous adenitis of the neck. Here we find him to be at variance with the practice in this country. "When a gland has begun to soften and to suppurate all general treatment is useless and we have recourse to surgical treatment. Two means are at our disposal: injections of iodoform or the use of a filiform seton." The former have been already described. The latter is passed through the substance of the gland to be treated. A moist dressing is applied, and "as a general rule in three to four weeks suppuration ceases; the thread can be removed, and thus we obtain a cure with only very small punctiform cicatrices." He is also opposed generally to the operation for removal of glands, and gives several reasons for his conclusion that "extirpation of glandular tumours of the neck is an operation which should not always be undertaken." The translator fortunately introduces two paragraphs in which he plainly disagrees with Professor Kirmisson's practice and opinion as to the use of the seton and as to the operative treatment of cervical tuberculous adenitis, quoting in the latter connexion Dowd and Stiles to show that the operation is one of the most satisfactory of modern operations if efficiently done.

We have every confidence in commending this work to the medical practitioners of this country, for it is to them especially that it appeals. And we have nothing but praise for the highly skilful way in which the translator has performed his task. He has succeeded in preserving the easy grace of the original, so that to read the book is a pleasure; while his editorial emendations and notes are models of conciseness, restraint, and good taste.

The volume is one of the Oxford Medical Publications, and that fact alone is a sufficient guarantee that the printing and general appearance of the book are all that one can desire. The illustrations form an important feature; they are numerous, and most of them are original.

We confess to some difficulty in comprehending the plan on which Dr. DE FOREST WILLARD'S book on *The Surgery of Childhood*[2] is built. The introductory chapter is on general surgical considerations; then follow chapters on regional surgery: head and face, neck and chest, abdomen, genito-urinary organs. Then we are switched off into a short dissertation on burns, frost bites, and boils in one chapter. Next comes the portion dealing with orthopaedic surgery and diseases and injuries of the bones and joints—this portion forming five-sevenths of the whole book. As a result of this arrangement—or want of it—there is much unnecessary repetition. But the book bears evidence of an immense amount of work; there is hardly any possible disease or surgical condition, not of childhood only but of almost any period of life, omitted. There is too much in the book of what any practitioner may find in any good textbook on surgery and far too little of the author's wide and varied experience in his children's clinics in Philadelphia. As an instance we may note that Dr. Willard devotes three pages to haemorrhoids, giving a moderately elaborate description of the condition and all the various palliative and operative measures in everyday use. We feel quite sure that every practitioner will turn to a textbook on general surgery for information on haemorrhoids rather than to one on the surgery of childhood; and we may ask whether the disease ever occurs in children at all. On the other hand, it is quite a common occurrence to find in children otorrhoea, mastoid abscess, infection of the mastoid cells, not to mention the grave intracranial complications resulting from middle-ear infection. Yet Dr. Willard devotes only eight lines to the whole question, with the statement that "otitis media and interna and mastoiditis are so serious in their results that the services of a skilled otologist are desirable." Amongst the causes of intussusception Dr. Willard gives "trauma"; can trauma ever directly be regarded as a cause of intussusception? Dr. Willard gives no specific cases, nor does he suggest how trauma may act. Then we find no reference to that important sign associated with the name of Dance—the sense of emptiness of the right iliac fossa—nor mention made of the necessity of rectal examination of cases suspected to be suffering from intussusception where, so far, no bloody mucus has been passed and where a small quantity of bloody mucus may follow the examining finger on its withdrawal. The description of Maunsell's operation for intussusception is far from clear, and no mention is made of the possibilities of short-circuiting by lateral anastomosis in cases which are irreducible. As to cleft palate, Dr. Willard's sympathies are apparently divided between operation about the third or fourth year and operation in the early predentition months; if the child is healthy, the operation should be done in the first six months. In the description of the ordinary operation, whereby the muco-periosteal flap is separated, no warnings are given of danger to the palatine arteries, and one of the diagrams shows the incisions so placed that there can be no escape for either the anterior or posterior vessels. Here our adverse criticism ceases. When we turn to that part of the volume dealing with orthopaedic surgery we feel that the author is dealing with his own subject. The chapters on deformities and their correction by operative treatment and by long-continued

[2] *The Surgery of Childhood, including Orthopaedic Surgery.* By De Forest Willard, A.M., M.D. (Univ. of Pa.), Ph.D., Professor of Orthopaedic Surgery, University of Pennsylvania, Surgeon to the Presbyterian Hospital. Philadelphia and London: J. B. Lippincott Company. 1910. (Roy. 8vo, pp. 851; 712 illustrations, including 17 in colours. 28s.)

muscular exercises are fully written and elaborately illustrated.

The author describes with great wealth of detail the multifarious exercises necessary for the correction of deformities both after operation and also in those cases where the question of operation does not arise. The main difficulty in the treatment of such a condition as scoliosis of adolescents, or, as Dr. Willard calls it, rotary lateral curvature, is to obtain perseverance on the part of the patient and persistence on the part of the doctor. Now the practitioner ought to make himself conversant with orthopaedic methods not requiring special apparatus, methods of treatment which he can and ought himself to carry out or at least superintend frequently. In Dr. Willard's book not only the family practitioner but the recognized orthopaedic surgeon will find an immense quantity of information on all possible kinds of deformities and their treatment, and we most heartily commend this work to their notice.

The pictures of orthopaedic wards are in a way a revelation to us in this country, where we have difficulty in obtaining even the most modest equipment for treatment of the deformities arising in infantile paralysis, scoliosis, rickets. The apparatus in the Orthopaedic Gymnasium, University Hospital, Philadelphia, includes overhead moving trolley suspending track for support of leather jacket used for paralytics, neck-pulls, stationary bicycle driven by electric motor for paralytic legs, forcible correction apparatus for lateral curvature, and many other apparatus for similar purposes. It is hardly necessary to add that Dr. Willard insists most strongly on the arrangement of the wards being such that they enjoy the maximum of sunshine, and all have porches into which patients can be wheeled in bed. As for educational schools for cripples, this is what he says:

> The author is fortunate in having at the Widener Memorial School for Crippled Children in Philadelphia a place where these handicapped children under 10 years of age can be received *and retained until 21*. [The italics are ours.] After needed surgical operations are performed, mechanical supports manufactured at the school are applied, and gymnastic muscular development is given. Each boy and girl, according to mental or physical ability, is educated and trained. At the age of 21 it is expected that each one will have acquired a mental or manual occupation that will render him or her in after-life a self-supporting and self-respecting member of society instead of remaining a dependent upon the community.

It is plain that Dr. de Forest Willard has exceptional opportunities for the study of crippled children, and we know from the volume before us that he has made most ample use of his opportunities. The book may be regarded as essentially an American book. The references to other writers, whether in textbooks or in society transactions, are to Americans with very few exceptions. Of course, we find in the text the names of a few surgeons on this side of the Atlantic, but wherever Dr. Willard wishes to suggest that further information may be obtained it is in the works of his own countrymen that he asks us to look.

ULCER OF THE STOMACH.

DR. FRIEDRICH CRAEMER continues his lectures on diseases of the stomach and intestines,[3] of which we have already noticed the previous portions (see JOURNAL, December 28th, 1907, p. 1831, and October 24th, 1908, p. 1275), by a monograph on ulcer of the stomach. In the preface he mentions that he gives in the appendix statistics relating to 150 patients who were treated as "ambulatory cases." This strikes us as singular, for we should have thought there could be no rule so generally accepted as that first laid down categorically by Leube, that cases of gastric ulcer must be treated by absolute rest in bed; we cannot help feeling that if Dr. Craemer is in the habit of disregarding this fundamental rule it vitiates many of his conclusions, for we believe that the great obstacle to the successful treatment of ulcer of the stomach is the fact that the cases are not diagnosed early and come so late under proper treatment. He divides his cases into six categories. The first includes those that are latent throughout and never give rise to any symptoms, but are only recognizable by finding healed scars in the *post-mortem* room. The second group comprises cases that remain latent until sudden perforation or fatal haemorrhage takes place. The third he calls subacute; the fourth dyspeptic; the fifth chronic; and the sixth complicated in some way—for example, by stenosis or abscess. He believes the commonest type among hospital patients to be the subacute, and that the complicated type is commoner in private patients, and is that most often seen by surgeons. He insists upon the difficulty of diagnosis, thinking that at best we can attain only to probability. He is equally doubtful about treatment, and he hesitates to admit that the ulcer is healed when the symptoms disappear, as it is possible that the ulcer has merely passed into a latent stage. He examines the evidence that has been put forward in favour of vegetarian diet as conferring an immunity to this disease, but he does not find it hold good, as in parts of Bavaria, where the people live mainly on vegetable food, the disease is frequent; nor does he think it bears any close relation to chlorosis, as in Munich ulcer is common, but chlorosis is rare. With respect to the alleged frequency with which ulcers become cancerous, he thinks it is possible that this happens more frequently than was formerly supposed, but that Moynihan's estimate is "much too high." He draws attention to the thickened and hyperaemic state of the mucous membrane in all cases of stenosis from simple obstruction, but asks whether it is caused by the ulcer or the stenosis. He thinks there is some relation between it and the altered state of the secretion. In the causation of ulcer he attaches primary importance to disease of the blood vessels and formulates the law, *ohne Circulationsstorungen kein Ulcus* (no ulcer without circulatory disturbance). He thinks mechanical injuries and the abuse of tobacco, tea, and coffee are factors in its production, but says nothing about imperfect mastication from defective teeth or the habit of bolting food, and he rather scoffs at the antipepsin theory, as "if it were true the ulcer ought to extend over the whole stomach." He also denies the influence of hyperacidity in preventing healing. He points out that Payr has produced typical callous ulcers by injecting hot normal saline solution, diluted formalin, and diluted alcohol into the blood vessels. But his final conclusion is that we know very little about the etiology of these ulcers. He is sceptical regarding the cause of the pain, as the stomach is not sensitive to touch, and artificially caused wounds of the stomach are not painful. Nor does he believe it to be associated with excess of hydrochloric acid, as this is not always associated with pain, and he thinks the good effects of alkalis, often quoted in support of this view, may be due to their causing the pylorus to relax, thus permitting the stomach to empty itself. At the same time he is disposed to believe that local congestion and inflammation and perhaps pressure by clothing or by muscular movements may set up pain. He agrees with most physicians in disputing the doctrine that hunger pain can be regarded as proof of the existence of a duodenal ulcer, yet he appears to quote Gerhardt with approval for the saying that patients "who do not eat for fear of pain are probably suffering from ulcer or cancer"; but patients with nervous anorexia refuse to eat on account of pain, although there is no lesion in the stomach! On the whole the book is more interesting as a criticism than helpful by suggesting solutions of the problems discussed. The treatment recommended follows well-known lines, but the author agrees with many in abstaining from giving iron on the ground that it is not well borne, although we cannot confirm this statement. He rejects operation for simple ulcer unless all other means have been tried and have failed, but accepts it when dangerous complications arise such as perforation, or for cases that will not heal and where the pain persists so that life is worthless, or working capacity destroyed. He does not seem sure that pyloric stenosis is an absolute indication for operation, and he does not admit that all cases of duodenal ulcer call for operation.

DR. HERSCHELL'S pamphlet on the *Non-surgical Treatment of Duodenal Ulcer*[4] is a reprint of an article published in the *Clinical Journal*. He emphasizes the importance of pyorrhoea alveolaris, bacteria from other sources, and anaemia in the causation of ulcer of the

[3] *Vorlesungen ueber Magen und Darmkrankheiten.* Von Hofrat Dr. Friedrich Craemer. 5 Heft. Das runde Magengeschwuer von Hofrat Dr. Friedrich Craemer. München: J. F. Lehmann. 1910. (Med. 8vo, pp. 243. M. 4.50.)

[4] *The Non-surgical Treatment of Duodenal Ulcer.* By George Herschell, M.D Lond. London: Henry J. Glaisher. 1910. (Cr. 8vo, pp. 39. 1s.)

stomach, but so long as the gastric juice is secreted the stomach is sterile. In his treatment he begins by attention to the teeth, which is sound advice, but we cannot follow him in considering that "the Wassermann test should be performed in all cases in which there is the slightest possibility of there being a specific infection." Thirdly, he recommends the administration of sour milk to disinfect the intestine, and he treats anaemia by the hypodermic injection of iron. He gives horse serum by the mouth "in order to remedy the deficiency of antitryptic and antilytic substances in the blood," and he employs alkalis, chiefly magnesia usta, with belladonna and atropine, to decrease the acidity of the gastric juice. In order to diminish the physiological excitors of the gastric juice he recommends that the food should be finely divided and rather insipid; alcohol he forbids, but advises the use of various fats, especially pancreatic emulsion. He treats the presence of adhesions—although he does not say how these are to be diagnosed—by thiosinamine (fibrolysin) injections. He thinks two weeks in bed absolutely essential, and three weeks better, and that after getting up the patient should wear a proper belt, take a daily dose of olive oil fasting every morning, and a daily dose of normal horse serum after the principal meal for a month, and twice a week for another month. He believes that after the treatment has come to an end there is still need for the dietetic precautions, and for occasionally examining the stools for occult blood for some time.

A HANDBOOK FOR SHIP SURGEONS.

THE second edition of the *Ship Surgeon's Handbook*, by Dr. A. V. ELDER,[5] affords an essentially practical and useful guide to every ship surgeon, whether old stager or new hand. It will be especially useful to the latter, often a "passage worker" or "single-tripper" who has blindly entered upon his duties immediately after obtaining his diploma or after completing hospital appointments; to such a man, bewildered by the unaccustomed surroundings, the advice given in this book is invaluable. Dr. Elder has rightly assumed complete ignorance of ship conditions on the part of his reader and imparts very sound instruction on such widely diverse subjects as provision of outfit, the ethics of fees at sea, the relationships of the surgeons to other officers, and the examination of crews and emigrants, in addition to the special modifications of treatment necessitated by shipboard conditions, and the maintenance of health on the high seas and in the tropics. Some note on the treatment of retention of urine might with advantage have been added to the chapter on outlines of treatment, for nothing causes greater anxiety to young ship surgeons than this condition.

Every young surgeon, before his first voyage, should read with care the opening chapters, in which he will find detailed advice as to the choice of ship, of outfit, and of additional apparatus and drugs. The information in these chapters, as indeed throughout the book, is accurate and reliable. Careful perusal of the chapters on status on board and fees at sea will save the neophyte much trouble and heartburning; if he orders his doings as advised, he will hold a dignified and consistent position on board, not always attained by the "doc."

The book admirably serves its purposes. If any faults are to be found they are minor ones; thus, to the list of books that the surgeon should take we would suggest the addition of one on dispensing, for both passengers and crew are apt to have a poor opinion of the inartistic and often repellent medicines so often dispensed by the inexperienced ship's doctor.

The "ironbound" headache so distressing to some passengers in the "roaring forties" and other cold latitudes, might with advantage have been mentioned and its treatment suggested.

We note with regret that carron oil is recommended for burns, and that insufficient stress is laid on constipation as a cause of diarrhoea, especially at sea; again the author would have been well advised if he had given a warning on the dangers of causing cellulitis by breaking off a guinea worm in extracting it, and also if he had insisted upon the necessity for the presence of moisture in the air if formalin vapour be used for disinfection. Dr. Elder's suggestion that the usual temperature of Lascars is above that of Europeans is not borne out by their temperature charts when admitted to hospital.

With regard to syphilis, Dr. Elder might have gone further, and recommended that in the business of signing on crews, all candidates showing signs of active primary or secondary stages of the disease should be rejected. The conditions of the forecastle and the "glory hole" are essentially insanitary and overcrowded, so that a syphilitic in the contagious stage is even more dangerous to his mates at sea than ashore. Dr. Elder says that he has obtained better results in the treatment of syphilis from the use of the soluble preparations of mercury for intramuscular injection than from the insoluble; this, we believe, is at variance with general experience; moreover, the method involves more frequent attendance at the surgery than if the insoluble preparations be employed.

With these exceptions the author's teaching is sound and valuable, and the book admirably suited to the special needs of the ship surgeon. It is clearly and succinctly written, though we would protest against the unnecessary use of such freshly coined or extremely ugly words as "unoriginality," "inuncting himself," and "astringing." We would recommend all intending ship surgeons to read this book before signing articles.

[5] *The Ship Surgeon's Handbook.* By A. Vavasour Elder, M.R.C.S., L.R.C.P. Second edition. London: Baillière, Tindall, and Cox. 1911. (Cr. 8vo, pp. 387. 5s.)

NOTABLE ENGLISH TRIALS.

THIS is the first volume of a series of English trials, to be published uniformly with the "notable Scottish trials," which were received by the public with some favour. To review *The Trial of the Stauntons*,[6] the first of the series, is by no means an easy task, for ordinarily the reviewer of a book should be in sympathy with the mental attitude of the author. Now there is no author of the volume, in the ordinary meaning of that word, with whom or with whose mental attitude we can be in sympathy, but we can congratulate the editor or compiler of the facts of the trial most sincerely on the extremely clear manner in which he has presented a somewhat involved tale. The volume opens with a prefatory note on the sources of information; then follows a very excellently arranged summary of contents with appendices and list of illustrations; next a sort of sketch of the case as a novelist might present it, followed in turn by an almost verbatim account of the evidence and the judge's summing-up and the verdict. The editor's work and that of the publishers has been most excellently done.

It is when we come to consider the value of the book from an educational or social point of view that we feel difficulty in writing this review. The publisher's advertisement quotes a sentence from Burke: "Such a collection (of cases) would exhibit man as he is in action and in principle, and not as he is usually drawn by poets and speculative philosophers." We cannot help feeling that though the exhibition may be there, it cannot be appreciated as it would be by listening to the trial, and no doubt it is Burke's idea that draws so many of the public to the Old Bailey in modern times just as it used to do; but the question may fairly be asked, Is it a desirable thing that an attempt should be made to render the exhibition reproducible from a printed record? The answer will no doubt vary according to the tastes of the individual; our own answer would be, No. While we do not, then, altogether approve of this motive for the publication of the work—let each take his choice on this matter all the same—we certainly must approve of the lesson which any lawyer, barrister, or medical jurist may gather from the pages of evidence, and especially from the judge's summing-up, and from the editor's introduction. Any professional man can there find an excellent example of how around a suspicious death there arises a growing circle of evidence, how this evidence has to be collected, sorted, and sifted, and its final value ascertained in the witness box.

To medical men the medical evidence in the case is extremely interesting. The late Dr. J. F. Payne was examined and cross-examined as to the differences between tuberculous meningitis and starvation. He was not apparently present at the autopsy. If he had been, one

[6] *Notable English Trials: Trial of the Stauntons.* Edited by J. B. Atlay. Edinburgh and London: William Hodge and Co. (Demy 8vo, pp. 332. [illegible])

feels that much more satisfactory conclusions would have been arrived at as to the cause of death, and evidently he thought so himself. Nowadays, no doubt, in a case of such importance (vital to the prisoners) an exhumation would be ordered, and all doubts thereby be set at rest. Curiously, Dr. Payne described tuberculous meningitis as a rare disease, an opinion we cannot subscribe to. The late Dr. J. S. Bristowe seems to have volunteered his evidence. Mr. Justice Hawkins, very rightly, in our opinion, condemned most strongly the manner in which medical evidence for the defence was obtained from eminent men who had only read the medical evidence on the other side but had not heard it given, and certainly had no first-hand knowledge of the case; in fact, one medical witness was asked to leave the box on these grounds.

The Attorney-General appears to have curiously misunderstood the medical evidence, or to have been misled by it, for he said: "I also asked Dr. Payne, if food came in connexion with the anterior coating of the stomach, might that cause redness, *which is all that is meant by inflammation of the peritoneum*." Holker, as a pathologist, would hardly have taken a first class if this represents his knowledge. But a dictum on a previous page rather makes one stare. Speaking of meningitis, he says: "These words are mostly derived from the Greek, and puzzle most people, and they are apt to say the doctors must settle the matter among themselves, but when they cannot we must do it for ourselves." If this is the way the leading barristers used to settle medical evidence, we can only hope that times have altered.

A general remark of Mr. Justice Hawkins on the medical evidence is well worth reproduction. He said: "I think it most desirable in all cases where original notes are made, be they long or short, be they in pencil or in ink—that which is taken at the time ought always to be preserved because it stops a great deal of cross-examination."

We have quoted enough to show the great interest of the book in question, but whether it and its successors in the series will be of permanent value time alone can show.

NOTES ON BOOKS.

AMONG the youngest of its congeners is the *Public Health Service Directory and Year Book*.[1] To perfect such a work the active co-operation of all those who should figure therein is essential, and in early days is often very difficult to obtain. Much credit, therefore, is due to the editor of the *Medical Officer* for the satisfactory degree of development which this publication has reached so early in its career. It is the more notable since the ground covered is very wide. The book supplies a directory, not only of medical officers of health, of public analysts, of school dental officers, and of sanitary inspectors, both male and female, but also of veterinary surgeons, inspectors of midwives, of school nurses and health visitors, and of hospital matrons. Nearly every section is preceded by a short article setting forth the duties of the officers concerned, and other articles deal succinctly with special points, such as the position of women in public health work. A good deal of miscellaneous information is also supplied. To those not directly engaged in the public health service the hundred pages occupied in setting forth the arrangements and officership of all areas in England, Scotland, and Wales will prove valuable for reference. To publications of this order the 0 to 5 age period is especially fatal, but we fully expect that on its termination the *Public Health Service Directory* will be found thoroughly healthy and strong.

[1] *The Public Health Service Directory and Year Book*. 1911. Compiled by the editor of the *Medical Officer*. London: Hodgetts, Limited. (Medium 8vo, pp. 374. 7s. 6d. net.)

A RECENT copy of the *Madras Mail* contains an account of a ceremony at Ooregum in April, when Dr. Thomas Joseph O'Donnell, on the eve of his departure homewards, was the recipient of a testimonial from the employees on the Kolar Gold Field. Dr. O'Donnell, who was for some twenty-six years medical superintendent of the part of Mysore known by this name, was asked to use a cheque for upwards of 3,000 rupees in purchasing something which would serve to remind him and Mrs. O'Donnell of the many years spent among the subscribers. They had, said their leader, to thank him not only for the admirable way in which he had arranged for the sanitation of the gold fields, but there was probably none amongst them who had not when laid low by sickness felt cheered and comforted merely by his presence.

SCIENCE NOTES.

As evidence of the advance which the subject of parasitology is making in this country, it is interesting to remark that at the last two scientific meetings of the Zoological Society no fewer than five papers dealing with parasitic worms were read. Some mammalian tapeworms were described by Mr. Beddard, the Prosector, whose zoological activities have now covered nearly the whole of the animal kingdom. Dr. Leiper had some interesting words to say on parasitism as it affects the animals in the Gardens, and he expressed the belief that the change of food and environment caused a great diminution in the number of parasites. He also had to record a number of new and interesting forms of nematodes collected at the Gardens during 1910, and, further, some new genera and species from tropical Africa. In this latter contribution he expressed the opinion that in the bursate nematodes the characters of the mouth capsule are of greater generic importance than those of the genital bursa. Dr. Nicoll described a small collection of trematode worms obtained from the mouth and lungs of snakes. He also gave an interesting account of a unique liver lesion in a hare, caused by a nematode worm. The hare was a "suspect" from the plague district of Suffolk. The liver was studded with calcareous nodules due to a parasitic nematode of the family *Trichotrachelidae*. The worms were so coiled up that they could not be extricated entire, but the ova, which were present in enormous numbers, showed that they must belong to a peculiar genus. No similar condition has been hitherto recorded from the hare or rabbit, but an analogous condition has been met with fairly frequently in rats. Experiments are in progress to determine whether the conditions in the two animals are caused by the same species of parasite. The hare further showed a large infection with *Trichostrongylus retortaeformis*, and a slight, purely intestinal, infection with *Coccidium cuniculi*. There were also signs of recent parturition and of an inflammatory condition of the uterus. Whether this or the liver disease was the cause of death was doubtful. The increased helminthological activity shown by the Zoological Society is partly due to an organized scheme whereby the parasitic worms met with in animals dying at the Gardens are submitted to the above-mentioned authorities for examination. The ectoparasites also are being systematically reported upon by Mr. A. F. Coventry. The scheme has been in operation now for over six months, and it is expected that much valuable material and information will be collected.

At a recent meeting of the Royal Irish Academy Professor Macalister reported on the excavation of some early Bronze Age burial mounds at Carrowkeel, co. Sligo. He stated that thirteen cairns, two dolmens, and fifty foundations of circular structures existed in the district. One of the dolmens consisted of a limestone table supported by selected blocks of sandstone, showing that the dolmen builders were alive to the difference between the stones. Of the cairns, one was found to have a large chamber fallen in, and was abandoned on that account. A second was a remarkable structure, consisting of a long hog-backed pile of stones, about 120 ft. in length and 35 ft. in breadth, with an entrance at one end and some ruined cists at the other. A third proved to be a cenotaph; a fourth contained a small pentagonal cist with burnt and unburnt bones and a food vessel. Two others contained large cruciform chambers resembling those at New Grange. The cairns dated from the time when the rites of cremation and inhumation overlapped.

Heüman, a Swedish physiologist, has been making some researches upon the peculiar taste which generally accompanies an application of electricity to the head or face.[1] If two zinc plates, wrapped in a cloth moistened with water, be applied, the one to the forehead and the other to the chin, and if a current of from 2 to 3 milliampères be made to pass from forehead to chin, an acid taste will be produced on the front part of the palate when the tongue is brought against its surface. If the direction of the current be reversed, a more feeble taste is experienced at the base of the mouth under the tongue. If a plate be placed on each jaw the acid taste is distinctly pronounced on the inner side of the molar teeth and the corresponding gums; and if one plate be placed on the

[1] *Arch. d'électr. méd.*, April 10th, 1911.

nape and the other on the closed mouth, the current being directed from front to back, the inside of the lips and the inner surface of the incisors and corresponding gums have a strongly acidulated taste, which, when the current is reversed, appears feebly in the pharynx. All the surfaces near the positive pole which are perpendicular to the direction of the current have an acid taste when the tongue is brought against them. As to the explanation of these phenomena, the author points out that the acidulated taste of an acid without the electrical current is proportional to the concentration of the ions of hydrogen. The intensity of the taste appears to depend upon the number of hydrogen ions per second which meet the papillae of the upper surface of the tongue. It is well known that the ions of hydrogen move with a greater swiftness than the other ions, and that they move in the same direction as the current. The ions of hydrogen are also found in the saliva, though in small concentration, and move in the direction of the current against the tongue, and it is for this reason that the anode surfaces have an acid savour.

THE LISTER INSTITUTE.

THE annual meeting of the members of the Lister Institute of Preventive Medicine, Chelsea Gardens, was held on May 10th. The President of the Institute is Lord Lister, and it is administered by a Governing Body, the Chairman of which is at the present time the Right Hon. Sir Henry Roscoe, F.R.S.; the other members are Viscount Iveagh, K.P., F.R.S., to whose munificence is due the fact that the Institute is the owner of the fine laboratories in Chelsea Gardens and the buildings of the Serum Department at Elstree, and is in a position to provide a larger scientific staff for carrying on the great amount of scientific work for which its numerous laboratories provide every facility; Dr. Rose Bradford, F.R.S.; Colonel Sir David Bruce, F.R.S.; Professor W. Osler, F.R.S.; Professor Ernest H. Starling, F.R.S.; and the Treasurer, Mr. J. Luard Pattisson, C.B.

At a meeting of the council held previous to the general meeting of members Sir Henry Roscoe, Dr. Rose Bradford, and Professor Osler, the retiring representatives of the Council on the Governing Body, were re-elected, and at the annual meeting Dr. Andrewes and Mr. Shattock were re-elected to the council, and Dr. Ledingham, chief bacteriologist to the Institute, was elected a member of the council.

The adoption of the report and balance sheet was moved by the CHAIRMAN, who stated that Lord Justice Fletcher Moulton had been appointed by the Senate of the University of London its representative on the Council of the Institute in the room of Dr. Pye-Smith, who had resigned owing to failing health. In commenting briefly on the report, Sir Henry Roscoe said that Mr. Sydney Rowland, whose services were placed at the disposal of the Advisory Committee for the Investigation of Plague in India two years ago, continued to work under that Committee, and that the Governing Body had been pleased to comply with the request of the same Committee that the services of Dr. Petrie, a former member of the Commission, should be placed at its disposal to proceed to Manchuria to study the recent epidemic of pneumonic plague in that province. Appended to the report was a long list of 67 individual researches carried on in the various laboratories, giving their titles and place of publication. The chairman pointed out that, in addition, certain organized inquiries had been carried out during the year under the direction of the Commission for the Investigation of Plague in India, experimental work had been conducted at the Bombay Bacteriological Laboratory at Parel, and epidemiological investigations at Poona, Belgaum, and Assam, investigations which were now being extended to Madras and the United Provinces. In addition, researches in immunization by various products of the plague bacillus, with a view to improving the standardization of plague vaccines, had been continued during the year at the Institute's special laboratories at Elstree. The fifth report of the Advisory Committee on the work of the Commission was published in a special number of the *Journal of Hygiene* last November.[1] The Institute had continued to examine, on behalf of the London County Council, milk intended for consumption in the metropolis, and the number of samples had steadily increased, until in 1910 it reached 2,950. An inquiry into the presence of other organisms, possibly deleterious to health, in the milk supply of London had been undertaken for the London County Council. Dr. Theodore Thompson, of the Local Government Board, and Dr. Ledingham, chief bacteriologist to the Institute, had concluded their systematic inquiry, carried on for two years, into the prevalence of typhoid carriers in this country, and arrangements had been made by which the Institute would continue the bacteriological examination of samples in the case of typhoid outbreaks throughout the country, where infection was suspected by medical officers of the Board to be due to a typhoid carrier. Further, the Institute had taken part in a concerted inquiry into the intestinal bacterial flora of children, organized last summer by the medical department of the Local Government Board, since the London portion is being carried out at the Institute by Dr. O'Brien. An investigation into certain aspects of the epizootic of plague recently discovered in East Anglia had been undertaken, at the request of the Principal Medical Officer of the Local Government Board, by the Director of the Institute, Dr. C. J. Martin, and Mr. Sydney Rowland. Their observations were directed to the species, habits, and distribution of the rats in the area affected, the amount of plague infection existing among the rodents, and the nature and prevalence of the parasites carried by rats and rabbits. In December a scheme for a systematic examination into the existence of plague infection of rats, captured in areas abutting on those parts of East Suffolk in which plague had already been discovered amongst the rodents, was submitted by request to the Local Government Board, the object being to ascertain the present limits of the epizootic. The scheme was approved by the Board, and carried out by Drs. Petrie and Macalister with the help of a subsidiary staff during January and February, 1911. The chairman also drew attention to the fact that the internal fittings of the new wing of the Institute had been completed during the year, and that most o the new laboratories were already in use. He added that additional stables and cottages for the employees had been built at Queensberry Lodge, Elstree, to meet the increasing requirements of the Serum Department.

The adoption of the report was seconded by Dr. Sidney Turner, and after the Treasurer had given a brief explanation of the balance sheet showing that the financial position of the Institute was satisfactory, the motion was passed unanimously.

It may be added, as even the medical profession seem generally to have a very inadequate idea of the amount of work in progress at the Lister Institute, that the scientific staff comprises nineteen people. The director is Dr. C. J. Martin, F.R.S., who has for his assistants in his own laboratory Dr. Harriette Chick and Mr. Sydney Rowland; in the department of bacteriology Dr. J. C. G. Ledingham is bacteriologist-in-chief at Chelsea, and there are six assistants; in the department of biochemistry Dr. A. Harden, F.R.S., is chemist-in-chief, with two assistants; at the head of the department of protozoology is Mr. E. A. Minchin, F.R.S., professor of this subject in the University of London, who has two assistants, while in the antitoxin and vaccine department there is a bacteriologist in charge of serum laboratories, Dr. A. T. MacConkey, and a bacteriologist in charge of calf vaccine laboratories, Dr. A. B. Green. The Institute also has a statistician, Mr. Major Greenwood, M.R.C.S., L.R.C.P., and a librarian, Miss Florence Wilson. In addition a large number of voluntary workers have carried on researches in the Institute during the past year; among these are included Dr. W. Nicoll (Ernest Hart Memorial Scholar, British Medical Association), Dr. W. J. Penfold, one of the research scholars of the British Medical Association, and Drs. Priestley and Ida Smedley, Beit Scholars. The library, which is already extensive, is arranged in a spacious and well-lighted apartment, which, from its position in the upper part of the buildings, is removed from the noises of London, though these, since the Institute looks out on one side on to the Thames and on another on to the gardens of Chelsea Hospital, are less obtrusive than in most parts of London.

[1] BRITISH MEDICAL JOURNAL, November 26th, 1910, p. 1726.

THE VOICE IN SPEECH AND SONG.

MUCH has been written about the human voice, the mechanism of its production and methods of training it for the purpose of song. These matters have been debated with no little heat by teachers of singing ignorant of physiology, and sometimes by physiologists who knew little or nothing about singing. The question of the different registers was for many years a cause of controversies as bitter as those about the iota which in Gibbon's phrase divided Christendom. While one school of trainers took anatomy as the basis of their teaching, the more artistic contented themselves with trying to develop the vocal power on empirical lines. We believe that Manuel Garcia, the discoverer of the laryngoscope, himself made little or no use of it in his teaching. To us it seems as unreasonable to insist that a singer should know the anatomy of the vocal organs as that a football player should be acquainted with the internal arrangements of the knee. In each case too minute a knowledge of the construction of the parts could scarcely fail to lead to a self consciousness which would necessarily tend to inefficiency.

There can be little doubt that the various vocal effects are produced by different singers in different ways. The experienced *maestro* is in any case a safer guide than the so-called "scientific" person armed with his laryngoscope and a knowledge of the anatomy of the parts which must necessarily be superficial. Absurd as may be the instructions given by the former to produce the note from the back of the nose or from the pit of the stomach, they represent the sensations which are in fact felt by most people in the delivery of the notes. One of the most successful teachers of singing of a past generation asked whether the vocal cords were not placed crossways to the long axis of the body. On the other hand, the instructions of the "scientific" teacher, conveyed in the vocabulary of the dissecting room, are not only futile in themselves, because the singer cannot control the infinite number of fibres that go to the making of different notes, but bewilder the pupil. If the "scientific" method were to be carried to its logical conclusions it would be necessary that a singer should know not only the structure of the larynx and the names of the muscles that move its various parts, but also the nerves, the channels of the will by which they are put into action. Further, he ought to know the centres from which proceed the impulses that supply the motor stimulus to these muscles. In short, to be a singer it would on this view be necessary to know the anatomy and physiology of the brain and nervous system as well as all the intricacies of the complex machinery called into play for the production of voice. It would be easy, therefore, to draw up a list of requirements for a singer as formidable as that by which Imlac convinced Rasselas that it was impossible to be a poet.

But although we have expressed the opinion that such knowledge as has been indicated is not necessary for the training of a singer, the subject of voice production is one of the most interesting questions in physiology. The voice is a marvellous instrument, which plays an incalculable part not only in ordinary human intercourse but in the expression of feeling and passion and in the influencing of men's minds in every sphere of intellectual and practical activity, from the guidance of a committee to the ruling of a nation, from the making of a bargain to the propagation of a creed. To the speaker a voice with the peculiar quality that can thrill an audience is a far more effective endowment than knowledge or insight. How many politicians owe everything to their voice! When one hears them one is carried away, but if the speeches are read in cold blood it is realized that they are but sound and fury signifying nothing. Burke bored the House of Commons when he spoke. As Goldsmith said, he "thought of convincing while they thought of dining." But it is recorded that a member who left in disgust while he was speaking afterwards read the speech and was amazed by the power of the argument and the felicity of the illustrations. It was all a matter of voice.

The voice, therefore, deserves to be studied as one of the most important agents in human progress. The subject has been made needlessly complicated by many writers, and we therefore welcome a presentation of it, at once popular in the best sense and strictly scientific, by Dr. Mott in his little book entitled *The Brain and the Voice in Speech and Song*.[1]

He has a gift of lucid exposition which makes the results of scientific research on the relation of speech and song to the brain easy to understand by a reader of ordinary intelligence. In his first chapter he briefly discusses the origin of speech, showing how originally man had at his disposal two languages, gesture and articulate speech, which he used simultaneously or interchangeably. Speech triumphed over gesture, which is an imperfect medium for the conveyance of ideas. How expressive it can be, however, is well known by those who have watched people in the south of Europe discuss their affairs, quarrel and make love by gesture. Spanish ladies can make their fans speak almost as plainly as the voice. Gesture, however, can only be a medium for the communication of ideas based upon concrete images. On the other hand, as pointed out by Dr. Mott, the images of auditory and visual symbols in the growth of speech replace in the mind concrete images and permit of abstract thought, which without the aid of language could not be carried on at all. It is speech that by its development has given man his place of superiority among animals. In the words of Huxley quoted by Dr. Mott, "Man has slowly accumulated and organized the experience which is almost wholly lost with the cessation of every individual life in other animals; so that now he stands raised as upon a mountain top far above the level of his humble fellows, and transfigured from his grosser nature by reflecting here and there a ray from the infinite source of truth."

As regards the vexed question of the nature of the vocal instrument Dr. Mott says it most nearly approaches a reed instrument. He lays proper stress on the art of breathing, and points out—what is often forgotten by speakers and singers alike—that mere loudness of sound does not necessarily imply carrying power of the voice, which depends as much on the right use of the resonator as upon the force of expulsion of the air by the lungs. The guiding sense which informs the singer of the amount of air at his disposal and when and how it should be replenished and voluntarily used is of fundamental importance to good vocalization. In speaking of "collarbone breathing," which is disapproved of by some authorities, he says he sees no reason why the apices of the lungs should not be expanded, and he suggests that in view of the frequency with which tubercle occurs in that region, it might be beneficial by improving the circulation and nutrition. We are glad to see that Dr. Mott points out a fact which we believe is still imperfectly appreciated by many singers: that it is not possible to determine by laryngoscopic examination the natural register of the voice. All that can be said is in general terms that the longer the cords the greater will be the range of the voice. This explains how Lablache, one of the deepest basses known, sang a whole scene in an opera in falsetto.

Dr. Mott's book is of special interest and value in the parts which treat of the cerebral mechanism of speech and song, the localization of the various centres of movement, and the influence of these in the production of defects. Incidentally he acknowledges the debt that science owes to Gall, the founder of phrenology. Although he wrecked his fame as a scientist by associating mental faculties with conditions of the skull instead of conditions of the brain beneath, nevertheless, says Dr. Mott, "he deserves the highest credit for his discoveries and deductions, for he was the first to point out that that part of the

[1] *The Brain and the Voice in Speech and Song.* By F. W. Mott, F.R.S., M.D., F.R.C.P., Fullerian Professor of Physiology, Royal Institution, Pathologist to the London County Asylums, Physician to Charing Cross Hospital. London and New York: Harper Brothers, 45, Albemarle Street, W. 1910.

brain with which psychic processes are connected must be the cerebral hemispheres." He was, in fact, the pioneer of cerebral localization, and the fate that overtook him, owing it must be admitted partly to scientific prejudice, but largely to his own flights into speculative regions, is one of the tragedies of the history of science. The whole question of localization of speech centres in the brain is discussed by Dr. Mott with an exceptional fullness of knowledge of neurology, supplemented by clinical experience. He reports a case in his own practice as probably the most complete instance on record of deafness arising from destruction of the auditory centres in the brain causing loss of speech.

A particularly valuable part of Dr. Mott's book is that in which he treats of the psychic mechanism of the voice. This cannot fail to be of interest to all intelligent artists, as he discusses not only the mechanism of the voice, but what may be called the mechanism of impression. Dr. Mott says: "A clever actor or orator can, if he possess a high degree of intelligence and a fairly artistic temperament, so modulate his voice as to convey to his audience the passions and emotions while feeling none of them himself." This opens up the question which has been so much debated by dramatic and musical critics, and which is generally known as the paradox of Diderot. The editor of the *Encyclopédie*, as is well known, maintained that if a passion was to be rendered with the most consummate art the artist must not himself be moved; he held that real feeling disordered the perfect control of the physical means of expression, and thus tended to spoil the art. This is of course directly contrary to the Horatian precept, *Si vis me flere, dolendum est primum ipsi tibi.* To this it may be replied that Horace was not thinking of acting or speaking, but of writing, of which the fundamental note must undoubtedly be sincerity. The opinion of modern critics has, we believe, been against Diderot's contention. For our own part, we think that he was very largely right. This does not mean, however, that the physical equivalents of the passion should not be as far as possible called into play. It is related of Macready that in the scene in the *Merchant of Venice* when Shylock comes in divided between grief for the flight of his daughter and rage at the loss of his ducats he used to take strong hold of a ladder in the wings and, so to speak, curse himself up to the concert-pitch of anger. There was philosophy as well as fun in Du Maurier's picture of the children wagging the dog's tail to put him in a good temper. By imitating the expression of face characteristic of anger, love, pride, or other passion, a corresponding feeling is gradually brought about in the mind. This is due, no doubt, to some influence that is brought into operation on the vascular, and especially the vasomotor, system. But the respiratory system also plays a large part. Dr. Mott points out that "the *mind* of the orator, actor, and dramatic singer exercises a profound influence upon the respiratory system of nerves, and therefore produces the necessary variations in the force, continuance, and volume of air required for vocal expression." He quotes Bell's statement that "when the voice suffers interruption and falters, and the face, neck, and chest are animated by strong passion working within the breast, language exerts its most commanding influence."

Dr. Mott well says that a perfect psychic mechanism is as necessary as the physiological mechanism for the production of perfect vocalization, especially for dramatic singing. A singer may have a magnificent organ, yet, for want of the mind which should speak through it to the soul of the hearer, it may be nothing but sounding brass. On the other hand, a person of comparatively poor vocal endowment may move the heart by the beauty of the rendering. Handel, who had what the Italians derisively call the *voce di compositore*, was once induced to sing in company, and so great was the effect produced that the most famous prima-donna of the day refused to sing after him.

It would be hard to define the qualities that make one voice excite a sympathetic thrill among hearers while others of like character leave them cold and unmoved. As Dr. Mott says, the effects produced upon the mind by dramatic song largely depend upon circumstances and surroundings, as well as upon the association of ideas. The following passage supplies a remarkable illustration of this: "I was never more stirred emotionally by the human voice than upon hearing a mad Frenchman sing at my request the Marseillaise. Previously, when talking to him, his eyes had lacked lustre and his physiognomy was expressionless; but when this broad-chested, six-foot, black-bearded maniac rolled out in a magnificent full-chested baritone voice the song that has stirred the emotions and passions of millions to their deepest depth, and aroused in some hope, in others despair, as he made the building ring with 'Aux armes, citoyens, formez vos bataillons,' I felt an emotional thrill down the spine and a gulp in the throat, while the heart and respirations for an instant stayed their rhythmical course. Not only was I stirred by the effect of the sounds heard, but by the change in the personality of the singer. It awakened in my mind the scenes in the French Revolution so vividly described by Carlyle. The man's facial expression and whole personality suddenly appeared changed; he planted his foot firmly forward on the ground, striking the attitude of a man carrying a musket, a flag, or a pike; his eyes gleamed with fire and the lack-lustre expression had changed to one of delirious excitement. A pike in his hand and a red cap on his head would have completed the picture of a *sans-culotte*. Dramatic song, therefore, that does not evoke an emotional response is *vox et praeterea nihil*."

Dr. Mott writes not only as a man of the highest scientific authority, but as one having a cultivated taste for music and a general feeling for artistic effect with art. This gives his book a special value. We commend it to all interested in the subject as containing more information as to the mechanism of the voice, its relation to the brain, and the artistic use of it, in less compass than any monograph of which we have knowledge.

INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.

A MEETING of pathologists resident in London and the provinces interested in medical museum work was held on May 13th, at 2.30 p m, for the purpose of receiving information upon the organization known as the International Association of Medical Museums, and with a view to extending the membership and general usefulness of this body in Great Britain. The meeting was called by Dr. Osler, Regius Professor of Medicine at Oxford University, and was held at the Royal College of Surgeons, London, by the courtesy and invitation of the President and Council of the College. Sir JONATHAN HUTCHINSON, F.R.S., occupied the chair. Dr. Maude Abbott of Montreal, Canada, Secretary and Treasurer of the Association, presented a report upon the origin, aims, and activities of the association. There were present also Dr. Arthur Keith, Curator of the Museum of the Royal College of Surgeons of England; Drs. Andrewes, Hugo Thursfield, and A. S. Woodwark, of St. Bartholomew's Hospital; Drs. E. A. Bashford, Imperial Cancer Research; Braxton Hicks, Westminster Hospital; R. I. Trevor, St. George's Hospital; Hubert Turnbull, London Hospital; Bernard H. Spilsbury, St. Mary's Hospital; M. Paine and E. M. Kettle, Cancer Hospital Research Institute; Kenneth Goadby, National Dental Hospital; I. Walker Hall, of Bristol; J. M. Beattie, of the University of Sheffield, and others.

Dr. OSLER said that the object of the meeting was to receive information from the secretary and to arrange for a meeting to be held in London in conjunction with the International Congress of Medicine in 1913. Dr. Abbott was known to most of those present as one who had developed the Medical Museum of McGill University to a high degree of usefulness in medical teaching by working along the strictly Anglican lines of systematic classification and

museum demonstration methods. In this country, where the work of John and William Hunter had laid the foundation of so many great museums, such work was bound to meet with much sympathy. As Secretary-Treasurer of the Association, Dr. Abbott had been intimately connected with this body from its earliest organization, and was therefore competent to give full information on the subject.

Dr. ABBOTT said that the International Association of Medical Museums had its origin in 1899 in a suggestion of the late Professor Wyatt Johnston, of McGill University, that an Association of Medical Museum Curators should be formed. This proposal was made by the McGill Museum to the Army Medical Museum, Washington, D.C., but action was not taken until 1906, when the matter was again brought forward at the suggestion of Dr. D. S. Lamb. With the co-operation of the late Major James Carroll, Curator of the Army Medical Museum, it was decided to organize an association which should be international in scope, and which should have as its object the development of an active department for the interchange of museum specimens and material for research, the elevation of the medical museum as a teaching medium, and the improvement of methods of museum technique by the discussion of methods. A constitution was drawn up, an organizing committee formed, consisting of Dr. Carroll (chairman), Professors W. G. MacCallum of Baltimore, A. S. Wartkin of Ann Arbor, F. F. Wesbrook of Minnesota, and the Secretary, and an invitation to membership was extended to leading pathologists throughout the world. So active and warm was the response elicited that it was evident a real need for such an association existed. Since then four meetings had been held, an active exchange department and an experience department for the interchange of information on points of museum interest had been established, and a yearly bulletin containing full reports of proceedings had been published. The membership had rapidly increased and now numbered 98, including representatives in Africa, Australia, and South America, as well as in the principal countries of Europe and North America. The latest step had been the organization of local European centres under the control of a corresponding member in France, Germany, Holland, and Belgium, through which exchanges were to be transacted locally, and the election of suitable members proposed. It was desirable that this step should also be taken in England, especially in view of the proposed meeting in 1913.

Sir JONATHAN HUTCHINSON said that the organization had his entire sympathy, as providing a link between museum workers that was much needed, especially for purposes of exchange. He thought it important that local centres should be established where duplicate material could, if necessary, be stored, and an adequate journal should be published. For this purpose funds would be needed in order that the work might be carried out on a scale larger than the membership fees would allow. He strongly recommended that an appeal should at once be made to a suitable quarter.

Dr. KEITH dwelt upon the importance of this association to workers in medical museums, and expressed his sympathy with it, and his willingness to assist it forward in every possible way. It was to be remembered, however, that a new association, however needed, must be made to bear lightly upon its members, there being already several societies to which medical men in England must belong. The provisions of the constitution, that the annual membership fee should be small (8s.), that the meetings should take place once annually only, and be held if possible in conjunction with the meetings of some other international medical body, were therefore wisely ordained.

After some general discussion the following resolutions were passed:

1. That after the arrangements for the meeting of the International Congress of Medicine at London in 1913 are completed, steps shall be taken to arrange for a meeting of the International Association of Medical Museums in conjunction with this Congress.
2. That the three great English medical societies, namely, the Pathological Society of Great Britain and Ireland, the Anatomical Society, and the Royal Society of Medicine, be made cognisant of the actions of the International Association of Medical Museums, and that co-operation with these societies be attempted, with special reference to the publication in their journals of the Department of Exchanges, as well as announcements and short reports of meetings.
3. That one or more correspondents in London be appointed to act as local secretaries.

Drs. Thursfield and Woodwark of St. Bartholomew's Hospital and Dr. Kettle of the Cancer Research Hospital were named.

All those present who were not already members joined the association.

NATIONAL INSURANCE.

A CRITICISM OF THE SCHEME AS IT AFFECTS THE MEDICAL PROFESSION.

By ALFRED H. WILLIAMS, M.D.Edin.,
HARROW.

THIS Bill is a difficult and, to the general practitioner, a very painful study. I have *read* it carefully; I have *marked* those portions of it which affect the medical man; I have tried to *learn* from it and from the Chancellor of the Exchequer's Memorandum and speeches what is really intended; but the *inward digestion* of it I find thoroughly unpleasant. I have searched in vain for evidences that Mr. Lloyd George's promises to guard the interests of the doctors had been fulfilled. I would like to call attention to a few of the sections that affect ourselves.

Workpeople and Compulsory Insurance.

Section 1, as explained in the Memorandum, states that the Bill is to effect as wide an insurance as possible of *the working population*. There is no satisfactory definition given as to what is meant by *the working population*. Certainly there is to be compulsion as to the insurance of certain persons described in the First Schedule; and in Part II of the same Schedule certain persons are excluded from this compulsion. But Clause (2) of Section 1 gives powers to the Insurance Commissioners to include any of these persons, so excepted, within the working of the Act. Whilst Clause (3) provides that any persons excluded from the compulsion to insure "who are engaged in some regular employment and are wholely or mainly dependent for their livelihood on the earnings derived from that occupation" may avail themselves of the benefits of the Act.

The only mention of any wage limit is in paragraph (*f*) of Part II of the First Schedule. This merely states that there is no compulsion to insure in the case of those employed otherwise than by way of manual labour and at a salary exceeding £160 per annum. From this it would appear that a person regularly employed, with a salary of £160, would be compelled to insure even if he had an additional £150 a year of private income, for which he did not work. I cannot find anything to prevent any one who works with his hands (take, for instance, an artist) from being compelled to insure, whatever his salary.

There should certainly be amendments introduced to fix a wage limit—I would rather call it a "total income" limit—to those who shall be entitled to avail themselves of the benefits of this Act. This income limit might be graduated with a correspondingly graduated scale of payment for the benefit of medical treatment.

Medical Treatment and Attendance.

Section 8 provides medical treatment and attendance for the insured. This should be more clearly defined in the Act itself. It should not be left to the absolute discretion of the Insurance Commissioners to define what is to be provided in the way of medical treatment and attendance. Nowhere in the Bill is any mention made of what is to be paid to the doctors for their work. The 30s. mentioned in paragraph (*e*) as the maternity benefit is not the confinement fee, as some seem to think. Mr. Lloyd George himself explained that this is to cover the provision of the doctor and the nurse. He admitted in his speech that the doctors had got a case for increased payment, but the only relief he proposes is to remove the obligation to provide drugs, and he talks in an airy way of raising the capitation fee to 4s. per annum. To speak of raising the capitation fee to 4s. is nothing but an insult, particu-

larly when provision is made neither for extra payment for what Mr. George himself describes as the uninsurable persons who will compose the majority of the "Post Office Contributors," nor for the exclusion of those who can afford to pay ordinary fees.

Diseases Due to Misconduct.

Section 13, Subsection (4) appears to provide that an insured person shall not be paid any sickness or disablement benefit for such sickness or disablement as may be caused by his own misconduct, but at the same time he shall continue to be entitled to medical benefit. The first part of this is sound enough; but, surely, if it is right to protect the fund against this obligation, it is also right similarly to protect the medical man. Provision ought to be made for extra payment of the doctor in these cases, as is now the rule in most "clubs." The extra cost of this might be defrayed out of the money saved to the fund by withholding the payment of sickness or disablement benefit.

The Agreements with Medical Practitioners.

Section 14, Subsection (1) provides that every approved (friendly) society and local health committee shall make arrangements with duly qualified medical practitioners for the insured persons to receive attendance and treatment. No provision at all is made for the free choice of doctor by the patients. All the insured will have to go to the doctor selected by the friendly society.

The Constitution and Powers of the Insurance Commission.

Section 41 provides for the appointment of Insurance Commissioners, who appear to have unlimited powers to fill in all the details so remarkably omitted from the Bill. The number and qualifications of these commissioners are not mentioned, nor is there any provision for the medical profession being represented amongst them.

Section 42 directs the Insurance Commissioners to appoint an advisory committee consisting of representatives of employers and approved societies and others; but again no mention of the medical profession, whose interests are more seriously affected by this bill than those of any other section of the community. Amendments should certainly here be introduced to make definite provision for the representation of the medical profession both amongst the Insurance Commissioners and on the advisory committee. The medical members of the advisory committee, at any rate, should be nominated by their medical brethren, perhaps through the medium of such societies of medical men as the British Medical Association. These medical members should be men who are engaged in general practice, and they should have had experience of the working of contract practice. The medical officers of State departments, such as the Local Government Board or Education Department, will not do for this work.

The Health Committees.

In *Section 43* provision is certainly made for some sort of medical representation on the local health committees. But of what use will this be when the somewhat unintelligible Subsection (3) seems to point out that there shall be 2 medical men on a committee of 24?

The above do not by any means include all the features of the Bill to which medical men are likely to object.

The Policy of the Medical Profession.

The bill as a whole seems to have been very carefully drafted so as to include many uncontroversial details, but to leave out as many as possible of the details to which the medical profession might object. By giving plenary powers to the Insurance Commissioners, these objectionable details will be filled in in secret, when they cannot be subjected to searching criticism in the country and amendment in the Houses of Parliament.

The results of this bill, if it becomes law as it stands, will be that contract practice, in its very worst form, will be enormously increased. Practically any one in the kingdom who works will be able to obtain medical attendance at the rate of 4s. per annum, and this without some of the limitations at present in force. The control of the medical arrangements will be in the hands of the friendly societies. Our position with regard to them has been bad enough in the past, but what is it likely to be in the future when these same friendly societies are backed by powerful State commissioners and supported by an Act of Parliament which seems to ignore our right to have any say in the management of our own affairs?

If this is to be prevented, we must now fight with our backs to the wall. And we must take care that it is the same wall that we have all got behind us. This is no time for us to quarrel amongst ourselves over such questions as to whether we prefer to be paid per visit or per annum per head. The question before us now is much more serious than that. It is how we can prevent its being made impossible for us to earn a living at all. In this we can surely find community of interest enough to enable us to present a united front in demanding that the objectionable features to which I have alluded shall be removed from the bill.

CORRESPONDENCE.

Let your reason with your choler question
What 'tis you go about.

Henry V, iii, 1.

Join we together for the public good
In what we can.

2 Henry VI, i, 1.

We have received a large number of communications on the scheme; we take the following points from letters from various correspondents:

Method of Remuneration: Choice of Doctor.

Dr. P. R. Cooper (Bowdon):

Though nothing definite is stated as to the remuneration of medical attendants employed under the scheme, yet, reading between the lines, it is clear the Government intend to establish cheap contract practice on an almost universal scale, and this despite the facts, which must be well known to them:

1. That, with few exceptions, the whole medical profession is strongly opposed to the system, especially when it places it under the heel of the friendly societies.
2. That the report of the Poor Law Commission emphatically condemns the system.

Only, therefore, a desire to obtain medical services "on the cheap," and a cynical disbelief in the ability of medical men to agree together and to combine for any specific end could have made such a proposal possible. Evidently the Government thought it most important to conciliate the friendly societies; *they* are keen business men, with over £40,000,000 of funds behind them, but the wishes or just claims of the medical profession were not worth considering; *they* are soft-hearted fellows (and apparently also, it is thought, soft-headed), who do not bother their heads about money matters, or are mostly too proud to admit it if they do.

However, I believe on this occasion the Government has reckoned without its host, for I cannot believe that at this epoch the medical profession is going to submit to the thraldom of the friendly societies, or to agree to a paltry capitation fee per annum from patients who can and are paying decent fees, and I imagine without the co-operation of the medical profession no scheme of national sickness insurance can prosper.

The medical profession is prepared to co-operate, and most heartily and earnestly to forward a truly efficient and national scheme for the insurance of the workers against sickness and the cost of medical attendance, but the present scheme of the Government will need considerable modification before it will come under this head.

No scheme which permits the sweating of medical men or establishes conditions of practice which are irksome or unfair in the extreme both to doctors and patients can be a permanent success even if it be ever adopted.

The medical profession is practically unanimous on the question of the free choice of doctor on the part of the insured, at least from those doctors willing to attend, and equal freedom of choice on the part of the doctor with regard to his patients must also be secured.

Also we insist upon *adequate* remuneration for services actually rendered, and do not desire to gamble for our

living. For it is nothing short of gambling to accept so many individuals, more or less healthy, at a limited fee per annum, and undertake the incalculable amount of labour which may arise during the period contracted for in medically attending them, and in giving such attention as an honest and conscientious practitioner would feel bound to give.

The medical profession has found by bitter experience the principle of a capitation fee to be in the interests of neither patients nor medical men. The principle of payment according to work done is the *only* just and fair method that can be devised short of the system of properly salaried medical officers. It is surely obvious now that neither the *amount* nor the *method* of remuneration will ever be satisfactory on any capitation basis that will ever be allowed by Government. What infinitesimal fraction of 1d. *per visit* will it make whether the capitation fee be fixed at 4s. or 5s. per annum? In neither case is it *adequate*, nor, in my opinion, would it be if the amounts were *doubled*, or even trebled; but the Government consider itself most generous in giving an extra 1s. or so per head per annum, and in handing over the provision of medicines to chemists. I have all along held the principle of the capitation fee is a bad one, and even granting that it has worked well in a few instances—for example, in the northern colliery districts (where the capitation fee is 13s. per annum)—I am satisfied it will not answer universally as a national scheme should.

What are the objections to payment according to work done? (1) That it will be *too costly*. Now, if only a minimum adequate fee per visit be paid, this is surely tantamount to saying that the country cannot afford to pay for its National Scheme of Sickness Insurance, and so is calling upon the medical profession to help it out in the name of charity. (2) That the medical profession cannot be trusted to deal honestly with the nation, and will forthwith begin to run up huge bills for unnecessary attendance. This indictment, if it were true to any serious extent, would indeed be a grave one against any honourable profession; but, whilst admitting that there are a few black sheep in ours as well as in other professions, we can confidently refute it in the mass. At all events, we have no objection to having our good faith put to the test or to submit to any reasonable safeguards or restrictions against abuse. If some of the ingenuity which has been devoted to drawing up the bill in its present form had been directed to establishing a proper tariff of fees for work actually done, with such safeguards as, for example, developing a proper system of medical inspection, imposing penalties or remission of fees for unnecessary attendance, collusion, or malingering, a measure which would have met with the general approval of the medical profession would have resulted, and there would have been nothing to stand in the way of its rapid and practical success.

Why does the Government wish to act through the friendly societies? The main reason, as far as I can gather, is to check malingering. Surely it would have sufficiently answered this purpose to have retained the disposal of the funds for sick pay in the hands of the friendly societies. But what need is there to place the control of medical attendance in the hands of these bodies, and in what way have they shown that they are qualified or fitting to have such control? On the contrary, it has surely been proved to demonstration that they are unfitted for such a trust by the general dissatisfaction which now exists through their short-sighted methods, both amongst the insured members and the medical men employed. The first thing for the Government to do, therefore, is to separate "medical benefits" from "sick pay," and whilst retaining the latter in the hands of the friendly societies, to put the former under the control of proper committees, with all the various interests adequately represented thereon—namely, State, employers, insured, and medical men.

The next amendment necessary in the bill is to allow for the substitution of payment according to work done for capitation payment, or, at least, it should be left to the local option of the medical profession and the health or insurance committees to agree as to the terms of remuneration, in any case allowing for the free choice of doctor and patient, and to avoid any undercutting and sweating of the medical attendant.

Dr. A. W. HARRISON (Merton, London, S.W.):

1. As the friendly societies have hitherto paid 4s. a year for healthy young men who have passed a medical examination, and who have a small wage, and as under the proposed scheme many older, less healthy, and better paid men will come into them, the old 4s. rate must go absolutely, especially as venereal diseases are to come under the free treatment.

2. Insured persons, whether in friendly societies or not, must be at liberty to choose their own doctors. For instance, take a district where the population consists mainly of clerks and artisans getting from 30s. to £3 a week, and who have hitherto paid ordinary fees. If, after insurance, they have to go to the "club doctor," the other doctors, who up to now have made a modest livelihood, will be absolutely, and not comparatively, ruined. This would be intolerably unjust.

3. The Government now pay 8s. 6d. a year for their postal employees, and as they can hardly assert that this is needless extravagance on their part, any capitation payment must be not less than this. Further, the postal employees are mostly young and healthy, and among the insured there will be many thoroughly bad lives; therefore, any capitation payment must be more than 8s. 6d.

4. But a capitation payment is thoroughly distasteful to the whole of the profession, and also will not secure the "best medical attendance," for in times of epidemic, etc., when the doctor is run off his legs and can hardly get his round done in the day, if any must be neglected or left to an assistant, will it be the patient who is paying a fee per visit or the "capitation" patient? I believe the vast majority of the profession would be satisfied with the modest fees now paid by the National Deposit Friendly Society, and this is a system by which the State would take the risk of the insurance; the capitation system throws the whole risk of the insurance on to the profession.

5. Modern methods of diagnosis and treatment are much more costly than the older methods. I need only instance such things as the examination of sputum, the ophthalmo-reaction, the Widal test for typhoid, the serum treatment of diphtheria, the serum or vaccine treatment for erysipelas or furunculosis, Bier's congestive treatment, the use of *x* rays and radium, etc. Such things are out of the question unless the doctor gets adequate payment.

6. A schedule should be appended to the Act itself stating the minimum conditions which will be sanctioned by the Government, and such sanction should be necessary before any scheme for payment can come into force.

Dr. WILLIAM ESCOMBE (Grimsby):

1. Supposing one man is lucky enough to obtain 3,000 State members at 5s. a head per annum, making £750 per annum, what is he to do when an epidemic occurs and perhaps 30 or 40 per cent. are ill? He certainly could not attend to them satisfactorily, if he could ever finish his daily round, and he will always have about 90 or 100 on his books even in times of peace. Any remuneration under 10s. a head per annum will be simply sweating, and I doubt not that numerous members of the profession will turn their attention to something else to obtain a living.

2. Certain members of the profession have for years declined to be sweated by friendly societies; others, less scrupulous, have accepted terms from 2s. 6d. per head per annum upwards. Are these latter now to reap the benefit and be rewarded with an increased payment per annum and still retain their number of members, with probably an addition, to the exclusion of those who have upheld the dignity of the profession?

3. What about special diseases—eye, ear, throat, nose, surgical operations of greater or less magnitude, and numerous others—are we to be general practitioners, or are we all to be general specialists? What about *x* rays, radium, serum treatment, etc.? Are we all to fit our surgeries up as special hospital departments?

4. Are we to be at the beck and call of all our clients at all hours of the day and night? Surely there must be extra remuneration for night calls and calls after starting on the usual morning round.

5. Maternity disbursement, 30s. What about extra fees for chloroform, forceps, versions, cephalotripsy, Caesarean sections, etc.? These are unprovided for.

6. Will the Government compensate us for the loss of value of practices which we have taken years to build up from nothing and of which the value will now be *nil*?

7. Obviously all hospital out-patients become obsolete; hence the material for instruction of students is taken away, and he cannot receive what is the most important part of his after-success, namely, instruction in the out-patient department.

"FAIR WAGES" writes: Dr. George Kenneth Pearson (p. 1128) hits the vital points in the interests of the medical profession:

1. A fair standard of fees payable to the profession must be insisted on.

2. There ought to be no monopoly, as there would be were special doctors appointed in each district. There are hundreds of doctors whose practices are carried on almost entirely among the classes of individuals who will come into the scheme, and who would be left without any patients at all in the event of special "society doctors" being appointed. Besides, it would be most unfair to the public to force them to have doctors for whom they have no liking.

Our correspondent concludes by suggesting a poll of the profession.

A correspondent who signs himself "Fair Play" writes to suggest a second perusal of the letter by Dr. George Kenneth Pearson in the issue of the JOURNAL of May 13th, p. 1128. This letter, he says, will, with few alterations, be found to voice the opinions and desires of the vast majority of private practitioners, especially in industrial centres.

There are, he adds, one or two points which could be modified without much objection on our part. For instance, the friendly societies should have no control over us whatever. No objection could be taken to their having the power to investigate and rectify any complaint of lack of attention by any individual member, or number of members, but they should not have any financial control.

Two points stand out above all others, as those with which an overwhelming majority will be found to be in favour:

1. Every insured person to have the right to choose his own doctor, whether he be a member of a friendly society or a Post Office insurer.
2. If payment be per head, the State to fix the minimum, such sum not to include surgical dressings, splints, etc.; and if for work done, the State to draw up a scale of fees.

Most important is the final paragraph of his letter, and if it be not feasible to form a union, the Association might have printed a circular embodying the above points and send a copy to every medical practitioner, asking him to say whether he will give his entire support to any steps the Association might take to enforce them. I am certain that those who are not members of your Association will willingly contribute their quota to the expense of the circular, which they can enclose with their reply.

EFFECTS ON GENERAL PRACTICE.

Dr. H. F. DEVIS (Bristol):

It is easy for those engaged in general practice among the middle and working classes to sum up the result if the bill passes in its present form. Fifteen million workers divided among, say, 30,000 doctors, gives 500 to each doctor. Five hundred workers at 5s. a head (the sum hinted by the Chancellor), and we arrive at the average wage of £125. The scheme is, however, to be worked by friendly societies and local authorities, both of which bodies are in deadly opposition to the principle of free choice of doctor. This means that one doctor will be employed at the comparatively large salary of £500, and three other doctors will be cut off from the scheme, and have to live on pickings of private practice among the dependents, and those few persons above income-tax limit who prefer not to come into the scheme. But the wage earners will be heavily handicapped by paying not only their own contributions but, in the majority of cases, the employers' share as well. Therefore they will have little money to spend on their old family doctor, but will seek, through health committee or friendly society, to make special terms for their dependents. Also, where there are two or three wage earners in a family, it will not be considered worth while to employ another doctor privately.

Even if free choice of doctors is allowed, a huge slice of income is cut off by our private patients being placed on club practice terms.

In either case the result must inevitably be absolute ruin to a great number, probably the majority, of the general practitioners throughout the country. Nothing but a pure and simple trades union can save us from financial ruin and moral degradation. On p. 1132 the editor of the *Pharmaceutical Journal* sees that a like danger stares chemists in the face, and he strikes the right note in saying "any bargaining should be done with the Government, and the result inscribed in the bill." He goes on to say:

> The satisfactory way of dealing with the matter—and it is a very simple way—is to establish a schedule of prices . . . and leave it open to any chemist and druggist to supply medicines at prices based on the schedule.

Here we have the great principles that many of us have long been working for—direct dealing with the Government, no insurance risk, free choice of doctor, and payment per item and not by contract. Surely, if these principles are good for chemists and druggists, they are also good for doctors.

M.D CANTAB. writes: Much as we welcome the general intentions of Mr. Lloyd George's National Insurance Scheme as a great measure designed to promote the social welfare and the better health of large numbers of the community, we must feel, I think, that, so far as we understand it at present, the bill looks likely to hit doctors very hard indeed, and the medical benefits proposed amount in reality to something very like State aid at the expense of the medical profession.

You will no doubt have stacks of letters from doctors stating various points of view. I venture to write from my own, that of a private member of the profession whose practice appears bound to suffer materially if and when this bill becomes law. There must be many other general practitioners in positions like mine, so my case is typical of the rest.

I have a practice in this North of England town of, say, eight hundred a year (£800), for which I paid over a thousand pounds (£1,000) in hard cash some twelve years ago when I came here from London. Nearly all my patients belong to the class affected by the bill, people "below the income tax limit"; they are "private patients," and I have no "medical clubs." My patients gladly pay me now 2s. 6d. for ordinary visits, more for night calls, and occasionally small fees of a guinea or two for an operation.

What will be the effect of the bill on a private practice like mine? It seems to me the prospect is appalling. These people will then be swept into the insurance scheme; we do not know yet even that they will be allowed to choose their own doctor, and whoever be the State doctor employed they will get their doctoring free for, say, 4s. a year. If I should have the fortune to get appointed as State doctor, or one of the State doctors in this place, my income from my present patients would be cut down by 75 per cent. or more, and if I did not have that piece of (?) good fortune it would be taken away altogether. Is this just and fair?

There must be many other doctors placed as I am, and I hope they will write to you, for unity is strength; we simply *must* combine, and if we do not stand up for our own rights nobody else will stand up for us.

The British medical profession is probably the most truly philanthropic body of men in the world, and would welcome any reasonable scheme for promoting the general good, provided the scheme were fair to doctors who already do so much unpaid work for the good of others; but this State Insurance Scheme, as it stands, appears so very unfair to many of us that it should be resisted by the medical profession, whose good will is essential for its real success, unless considerably modified in our favour.

Another correspondent, who signs himself "A POOR DOCTOR," writes: The State Insurance Scheme seems the most serious thing that has happened to the profession for many a day. In the town in which I live there are about 25,000 inhabitants, and only about 3,000 of these pay

income tax, including the children, whom, we are told, will shortly be admitted to its benefits. Thus about 20,000, or 4 out of 5 of the whole population will be entitled to "club" attendance. I have been in practice for over thirty years, and, in addition to managing a free charity, for which I get a house and salary, I have a private practice, chiefly among the industrial classes. Under this scheme it seems there will no longer be any charities required, and I shall lose not only my house and salary, but also three-quarters at least of my income from private practice. Two of my sons are studying in London for professions at the present time, and are in the middle of the course. If my income is taken away I fail to see how I am to keep them on to the end. We are told that this scheme has been received with universal approval; of course, it has among all those—that is, the large proportion of the population—who will no longer be called upon to pay for illness; but it is a very different matter and a very serious one for the poor doctor, who will have to attend them all the year round for 4s. a year. The Chancellor of the Exchequer tells us that even those who do pay income tax can contribute also, so there seems no reason why Mr. Lloyd George or, say, Lord Rothschild, should not themselves be attended at the same rate.

THE STATE AND THE MEDICAL PROFESSION.

X. Y. Z.: I cannot see why a State Insurance Scheme could not be set afoot without meddling with the medical profession. Why should we be dragged into it? Cannot we be allowed to go on as we are, and benefit somewhat from the increased ability of the working classes to pay their debts to us? Is there not plenty of poverty in the profession which would be lessened thereby?

Is it that the much-talked-of scheme of socialism is to begin along the line of the least resistance—that is, the medical profession—and then spread over the other callings? The general practitioner has stood enough from the State. Up to the present we have tamely submitted to the following:

1. Death certification without pay.
2. Vaccination without pay.
3. Being turned into common informers on our patients for niggardly, and in Poor Law cases ridiculous, pay.
4. Being made imperceptibly to assume positions of subordination to medical officers of health, who harass us in our dealings with our patients
5. Being deprived of the treatment of all infectious cases without obtaining any compensation.
6. Midwifery ditto ditto
7. Vaccination ditto ditto
8. Being compelled to inform on parturient women without pay.
9. Being gratuitously and grossly insulted at the foot of lunacy certificates.
10. We have to pay in spirit duty one-third more for most tinctures than we did before the last Budget without any chance of recovering it from the patients; and we have narrowly escaped, through the vagaries of a general election, being compelled to make special visits without pay to verify deaths.
11. The Midwives Act, passed ostensibly in the interests of parturient women, is in reality, as many of us know, to their great disadvantage and danger.

And now it is proposed:

(*a*) To take away from us the last remaining thing left to nine-tenths of us—that is, such little practice as remains to us amongst those with less income than £160 a year, and those with more, who choose to pay their few pence to the State.

(*b*) To debar us from compounding our own prescriptions on the insulting grounds that we cannot be trusted to use expensive drugs where needed, whereas the chemist's boy, as compared with us, is the soul of honour and honesty, and may be implicitly relied upon.

(*c*) To debar us from attempting to get paid for our services under a penalty of £50.

(*d*) To sweat us as we have never before been sweated.

The last inch of ground held by the general practitioner is now to be taken from him. Will he stand up and fight for it? Trades unionism is wielded with effect by every other calling; if we continue to neglect that weapon ready to our hand, we deserve to be looked upon as the greatest fools alive.

Dr. B. W. GOWRING (Dorchester):

By all means let us have national insurance, if it is thought desirable, but why should free medical attendance be included at all? Why should not the bill be baited with free legal attendance? If I insure against sickness or accident, I get, when such occurs, a sum out of which I pay my medical and other expenses.

Mr. Lloyd George has insulted our profession, but let it be hoped he has for once united us by his extraordinary disclosures. Does he really imagine that we shall consent that *any one* who chooses to find 7d. a week can claim free medical attendance, or that the profession can be adequately paid out of the same?

A CLUB DOCTOR writes:

The letters published in your last issue on this question appear to me to be unduly pessimistic. I can see no reason why the present crisis, if properly and judiciously handled, should not lead to an immense improvement of contract practice.

To begin with, the first step is taken to do away with dispensing, which is surely a great gain. Then as to remuneration, it is not so much a question of what is offered as what we are prepared to accept. The medical profession has now a golden opportunity, which may never occur again, of settling the question of contract practice once and for all on just and reasonable terms.

The old battles with the clubs too often had an unsatisfactory ending because the struggles were small and local; now if the whole profession unites and insists upon its rights it must win. There will not be enough blacklegs to serve the purpose of the friendly societies.

There are certain points which appear to me to be of paramount importance. There must be a uniform rate of payment; we must not tolerate any undercutting of individual practitioners.

There must be free choice of doctors for the insured.

There should be some extra charge for night calls—say, between 8 p.m. and 8 a.m—or our lives will be a burden.

Voluntary contributors should not be accepted at contract rates at all. This class will contain the most flagrant club abusers, and if any one, from Cabinet Ministers downwards, can join, it is obvious that they should be treated as private patients.

It would be far preferable if all the medical arrangements were in the hands of the local health committee, so that medical men should in no way be in subjection to the clubs or their officials.

UNA VOCE writes: The National Insurance Bill will make or mar the general practitioner in this country. If we are united to a man we will get fair play; if not, we are practically doomed, and we may as well at once withdraw our sons from hospital and send them out to farm in Canada. If an immediate arrangement can be made whereby the British Medical Association, by means of its Branches and Secretaries, can ensure every practitioner in the British Isles being canvassed, and his signature obtained to a document binding him to act in this matter with the whole profession as represented by the British Medical Association or other approved body, then the day is ours. If this canvass cannot be effected without cost to the Association, I am willing to subscribe £5 towards it, and I have no doubt others will do the same. In this way only can we hope to secure anything approaching adequate remuneration for our services.

H. D. writes: If Mr. Lloyd George sincerely wishes to put the work of the friendly societies and their medical officers on a proper footing, he now has the chance of a generation. If his plan fails to be just to us, then would our living be taken away from us, and the supply of medical men would seriously fail. To day no man will readily let his son begin his medical studies feeling that perhaps the scheme may end in reducing doctors to so many machines for attending the democracy at so much a head. Not only will this affect the very useful tribe of general practitioners, but the higher branches of the profession, and as a money-earning business medicine will fail more than it has yet done. Without appearing to be defiant let all medical men unite as one body and make one common demand for better treatment and better pay from the club members. I think the only one lasting settlement is paying medical men per visit. If a medical man is found paying too many visits there must be ways of putting a stop to it, and, after all, the club member gets the benefit, however doubtful, of more attention. I do not think this over-attendance will commonly occur, because the system

of paying per visit will attract the better class of medical men, and they can be trusted to work the system honourably. Each club could easily be asked to make a special levy on their members to make up any deficiency in the amount laid aside for doctors' bills, and the prospect of an extra levy will put the club member on his guard.

The Wage Limit and Friendly Societies.

Lux e Tenebris writes: The proposed National Insurance Bill is so full of injustices to the medical profession that one can only point out the most glaring of them.

The wage limit for compulsory insurance is ridiculously high, and the proposed figure of £3 per week should be reduced to 30s. Those who go in for the voluntary part of the scheme, and who are earning over 30s. per week, are able to pay in the ordinary way for medical advice, and should on no account be attended as State patients. This is in my opinion the most objectionable feature of the bill, as it stands at present, and we should strenuously resist it.

On no account should we condescend to bargain with the friendly societies. We know how they have treated the profession in the past, and can imagine how they will in the future. Let the Government fix the remuneration with the approval of the Association, and let it be included in the bill.

Above all, we must unite and be prepared to fight for our liberties, if the Government refuses to offer terms which will be acceptable to the profession. Dr. G. K. Pearson's suggestion that the Association should form a union of all the practitioners in the country is excellent, and the Association has now a splendid opportunity of showing what it can and will do for the practitioner. But there is no time for delay. We must act now, and act determinedly, lest we waken to find that, like Nero, we have slept while Rome was burning.

Dr. J. A. B. Hammond (Shanklin):

In the *Daily Telegraph* of May 10th Mr. Lloyd George is reported to have said, in speaking of his new scheme: "This is not a doctors' endowment bill, and doctors must not be too greedy, otherwise they will lose all." The tone of this threat ought to be a solemn warning to all of us that if ever there were a time when it was necessary for the profession to show a united front, that time is the present.

It must have come as a startling surprise to many that in his new scheme Mr. George proposes to have *no* wage limit to those who may join in the benefits. If the rich are to be allowed to rank with the poorest, it will mean the ruin of many a mediocre man, and the refusal of the better man—who is more sure of his position, and who knows the rich value his advice sufficiently to continue paying at the old rate for it—to have anything to do with the scheme.

Some may have sufficient faith to believe that the rich will hold it beneath their dignity to avail themselves of any doctor's services (however good) for such inadequate fees; but that the Chancellor intends otherwise is obvious from his statement, when interviewed, that he intends his own children to join.

Although Mr. George is apparently using the payment made by the friendly societies as his standard, two important differences between his scheme and that of the societies appear to have been overlooked. In the State Insurance Bill there is no preliminary examination by which the unfit may be rejected, and those suffering from diseases contracted through their own vices are still eligible for free medical advice. These points alone ought to mean a very considerable increase in the rate of payment under the Government Bill.

An Algebraical Formula.

Dr. Arch. M. Laurie (Houston, Renfrewshire):

In view of the uncertainty as to the amount per head that should be paid to the medical practitioner, it would be well if the same could be arrived at by a mathematical formula such as the following:

Let x = amount per head per annum to be paid to doctor in shillings;
A = average income of practitioners in the British isles;
B = average population per doctor;

then—

$$x = \frac{A \times 20}{B}$$

Supposing A to be equal to £350;
B to be equal to 1,000;

then—

$$x = \frac{350 \times 20}{1000} = 7s.$$

In recent discussions on the average income a very low average of £200 per annum was put forward, and it will be seen by using the above formula that this average has been taken by Mr. Lloyd George in arriving at the sum of 4s.:

$$x = \frac{200 \times 20}{1000} = 4s.$$

The average should not include the income of assistants, or, if so, due allowance should be made.

The Generality of its Effect.

Dr. Basil Jackson, L.R.C.P., M.R.C.S. (Brighton): If ever there were an occasion on which the profession ought to unite, surely it is the present one. This bill is going to affect every one of us. The club doctor, because every club doctor has private patients and hopes for more, and naturally his private patients will become club ones; the doctor with the surgery, because servants, clerks, etc., will visit him no more. The middle-class practice will lose the shopkeeper and the middle-class patient; and the higher class practice will also lose, as scores of rich people will join, either out of meanness or from a feeling of getting something back from the Government for all the taxes they have paid. As for the poor consultant, he will soon have nobody to consult over (as of course the State will soon appoint consultants to the clubs), and so will be free to give all his time and energies to his post at the hospital. Finally, the bill is the first step to the Irish dispensary system over here, and the death-blow to every man in practice.

And surely the class for whom this bill is primarily intended have taught us the remedy for this. If the medical profession throughout England unite against the bill, the bill, as far as we are concerned, is dead. What right has any man to take the bread out of our mouths?

Let all the medical men unite and refuse to have anything to do with this new club work in any way at all, forming a league of medical defence, every member of which shall agree, under oath, not to accept any work under this bill unless terms acceptable to the profession are forthcoming; and not to attend any person insured under the Act, under any circumstances, unless they should be his own patients employing him regularly, and only insured on account of the other benefits of the Act.

We stand at the parting of the ways: independence and self-respect on the one hand, and—servitude on the other. And we are choosing, not for ourselves alone, but for our sons and for those who shall come after us.

A Leading Practitioner in a manufacturing district, who has himself reached a stage in which the matter can hardly affect him directly, writes:

As usual, the profession will be left to fend for itself and be satisfied with so much or less per head per year as a pettifogging little lawyer will charge for writing a short letter from behind his desk. It is a good profession to be out of, and rather than accept service under the scheme foreshadowed I would, were I a young man, take to some decent manual labour to eke out an existence.

I have been trying to get something tangible out of the bill, and to compare what the relative position of the medical man will be under it with the present conditions prevailing in this district under contract practice arrangements. As far as I can see, the present conditions are infinitely better. If every man earning less than £160 a year is to benefit under the bill, what is to become of the majority of medical men in private practice in such districts as this, where nine-tenths of his patients will be entitled to professional attendance and other benefits for 4d. per week?

What will become of the profession if the rewards under this bill will be the attraction for entering it? No prudent parent will spend a thousand or two in educating his son for it, and no man of decent breeding will dream of entering it. The scheme even as it stands will not matter to me in the slightest degree.

SOUTH OF IRELAND writes: My practice is largely composed of small farmers and the upper working classes. From what I read, Mr. Lloyd George proposes to hand over my patients to the medical officer of health or the dispensary doctor. Can this possibly be true?

*** Not necessarily, for our correspondent may find that he will have an opportunity of attending them at insurance rates; if so, he would have to attend not only small farmers, but also the bank manager and his clerks, the solicitor and his clerks, and the tradesmen, including the publicans. Insurance would be compulsory on the clerks provided their salary was not over £160 a year, and they would pay only 4d., their employer paying 3d.; the others could join as voluntary insurers, and would have to pay 7d. a week. The Government would add 2d. in all cases.

NOTES.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE following letter has been addressed to the Prime Minister and the Chancellor of the Exchequer:

Royal College of Surgeons of Edinburgh,
Edinburgh, May 16th, 1911.

Sir,

At a meeting of the Royal College of Surgeons of Edinburgh, held this day, the following resolution was unanimously carried, and was ordered to be communicated to you:

> That while sympathizing with the objects of the National Insurance Bill now before Parliament, this College most earnestly prays His Majesty's Government to allow ample time for the thorough consideration of the details of this complicated and far-reaching measure, and in view of the important part which the medical profession must play in making any such bill a success, and of the very serious consequences which may result to the whole profession, this College desires respectfully to express its strong feeling that this bill ought not to be pressed forward in the present session, in order that the public, and very specially the medical profession, may have time to thoroughly consider the provisions contained in it, and if thought necessary, to make suitable representations to Parliament.

We desire to point out that this resolution has been approved of by representatives of every shade of politics, and that it is forwarded in the interests not only of a large number of our Fellows, whom we represent, but also of a large number of our Licentiates residing all over Scotland, as well as England and Ireland, who are doing good work in every part of the United Kingdom for His Majesty's lieges.

We earnestly ask your careful consideration of the above resolution.

We are,
Your obedient servants,
Signed in name and by authority of the Royal College of Surgeons of Edinburgh,
GEO. A. BERRY, President,
Seal. R. MCKENZIE JOHNSTON, Secretary.

MEETINGS OF THE PROFESSION.

A MEETING of all the practitioners in Newark-on-Trent and district, together with several members of the Nottingham Division of the British Medical Association, was held at Newark on Friday, May 12th, to discuss the State Sickness Insurance Scheme. The following resolutions were carried:

1. That the medical benefits under the State scheme should only apply to persons earning £2 per week and under.
2. That the principle of throwing the work open to all medical men, and allowing the patient a reasonable freedom of choice of doctor should be adhered to.
3. That in the event of the payment of medical men being per capita, the capitation fee should be fixed by the State and paid through the Post Office.
4. That a copy of these resolutions should be forwarded to the Member of Parliament for the district.

In addition to this meeting and to others recorded in the SUPPLEMENT, meetings of the medical profession to discuss the medical aspects of the Insurance Bill are being held in many other localities. Among those of which notice has been received are the following:

Dulwich	May 17th.
Cardiff District (Colliery Surgeons) ...	May 18th.
Fife	May 18th.
Cambridge	May 19th.
Edinburgh Branch	(date to be fixed).

The resolutions adopted by the Bury Division, the Furness Division, and the Croydon Division of the British Medical Association will be found in the SUPPLEMENT, pages 244 and 246.

INSURANCE COMMISSIONERS.

The medical profession is accustomed to receiving scanty consideration in Acts of Parliament, and from this point of view the National Insurance Bill varies in no wise from the average. On the one hand, throughout the whole of its 82 pages, 87 clauses, and 9 schedules, the most scrupulous care is exercised to avoid trenching on the rights of friendly societies and to conciliate their members, while on the other it seems taken for granted that the medical profession will fall into line with whatever may be demanded of it. Nowhere is this cavalier note more obvious than in the clauses relating to the appointment of the Insurance Commissioners. It is they who will interpret and adminster the Act, and on almost every page appears a reference to their multiple powers and duties. These include matters of such importance as extension of the compulsory operation of the Act to those who initially stand outside it, the control of Health Committees, and the drawing up of tables which will be used for the purpose of determining what is the natural sickness-rate of any given locality. In addition, the Commissioners will be the judges of what constitutes satisfactory medical attendance and treatment; for every approved society and local health committee must make arrangements "for insured persons to receive attendance and treatment *to the satisfaction of* the Insurance Commissioners." These Commissioners are to be appointed by the Treasury; nothing is said as to their number, but the scheme provides that in addition to appointing and paying "officers, inspectors, and referees," the Insurance Commissioners must also appoint an Advisory Committee to assist it, such committee to consist of "representatives of associations of employers and approved societies and of such other persons as the Commission may appoint." Seeing that the duties of employers and approved societies respectively are clearly laid down in the Act itself, it might have been expected that the Advisory Committee would consist not of such persons but of actuaries and medical men, these being the persons whose expert advice and assistance will clearly be most required. Possibly the authors of the Bill have taken it for granted that the Commissioners will include medical men among the "other persons" whom they are instructed to appoint. The medical profession, however, is not likely to be satisfied with a vague inference of this character; hence, to whatever arrangements it may assent in the matter of payment for medical benefits supplied through its members, it may be expected to stand out for adequate representation on the Insurance Commission and the Advisory Committee. Often when the interests of medical men are lightly treated by Acts of Parliament the number affected is small, but this particular bill is clearly so far-reaching in its effects that the medical profession will certainly be united in stipulating that it shall secure them representation on the managing body in specific terms.

HEALTH COMMITTEES.

It is not only in regard to the appointment of the Insurance Commissioners and their advisers that the National Insurance Bill is unsatisfactory; it is only a degree less open to objection in respect of the Health Committees. These are to be constituted in every county and every county borough, and will be bodies numbering between eleven and twenty-two persons. Their duties are to make arrangements for the provision of medical benefits to Post Office contributors (that is to say, to make contracts with medical men for attendance on these persons), to arrange for the establishment and maintenance of sanatoriums, and to consider the needs of the locality in respect of all questions of public health, making such reports and recommendations on the latter subject as they may think fit. Their members are to be appointed by four sets of persons, as follows: One-fourth of the total number, whatever that may be, by the Insurance Commissioners themselves, and of the remainder, one-third by the council of the county or county borough, one-third by any approved societies having insured members resident in the locality, and one-third by any association of Post Office contributors that may be formed. It is quite clear that on such bodies the medical profession should be represented; and in some

degree the authors of the Act have appreciated this fact unprompted, for the bill lays down that of the members to be appointed by the Commissioners at least two must be medical men. This is satisfactory so far as it goes, but it commonly happens that when an Act or Government order lays down the minimum of medical men to be appointed to any committee brought into existence, it is only this minimum of representation which is eventually secured. In this case the minimum of representation might be anything between a ratio of 2 medical men to 9 laymen, and a ratio of 2 medical men to 20 laymen—a highly unsatisfactory position of affairs. On such bodies as those in question the proportion of medical members should be high enough to insure that the views of medical men are not only put forward, but are backed up by a considerable weight of votes. If such a condition in this instance be not secured by the Act, it is certain that, apart from other drawbacks, the Health Committees, in making arrangements for the provision of medical benefits, will tend to fail to pay a proper degree of attention to the views of the profession in their locality. In that case there will be a continuous risk of conflicts arising between the Health Committees and Divisions of the British Medical Association, and any other organized bodies of medical men that may exist or be formed, and there may be times when the Post Office contributors will be left without any medical attendance at all so far as the Health Committees are concerned.

The Friendly Societies and the Scheme.

At a meeting of the Committee of the National Conference of Friendly Societies held on the day after the bill was introduced into the House of Commons by the Chancellor of the Exchequer, a resolution was adopted recommending the scheme to the favourable consideration of the friendly societies, subject to a careful examination of the details of the bill. It was arranged to summon a special meeting of the Conference on June 28th.

A special delegate meeting of the Ancient Order of Foresters will be held at Burton-on-Trent on May 30th and subsequent days to consider the scheme.

At the annual meeting of the Yorkshire Union of Friendly Society Councils, held in Bradford on May 6th, the bill came in for some unfriendly criticism on the ground that it would destroy or damage the friendly society system. One speaker argued that the friendly societies had been working for a century or more voluntarily, had accumulated funds of £60,000,000, had a membership of over 6 millions, and paid annually in sick pay £6,000,000, and that they might have been left to carry on their good work.

At the annual meeting of the Nottingham and Eastern Counties Conference of the Manchester Unity of Oddfellows, held on the same day, it was stated that the officials of the friendly societies had assurance from Mr. Lloyd George that the societies would not be in any way injured.

At a meeting in London on May 8th of the Association of Industrial Assurance Companies and Collecting Friendly Societies, the secretary stated that the association had received assurances from a large majority of the House of Commons to support no measure which would interfere with the existing rights or give preferential treatment to any institution over other legally constituted existing institutions.

At the forty-second annual general meeting of the National Deposit Friendly Society held at Gloucester on May 13th the chairman expressed the opinion that the financial questions involved in the bill were serious. It was arranged to hold a special conference in London shortly to consider the question whether the society should go on as at present or seek to adapt its constitution so as to become an approved society.

At the Southern Conference of the Manchester Unity of Oddfellows, held at Salisbury on May 13th, the president said that no effort should be spared in defending the full and free independence of the Order so far as the management of its lodges and funds were concerned. The bill involved the possibility of State interference, which, if allowed in any form, might mean the undoing of a century's work; if, however, the interests of the great friendly societies were properly safeguarded, he thought the Manchester Unity could support the measure.

A Wages Limit.

Some correspondents appear to be under the impression that the National Insurance Bill establishes a wages limit, even if it be too high a one. It is worth while, therefore, to point out that when the clauses of the bill are read as a whole they do not suggest that it is the intention of the bill to exclude any employed person from the benefits which it establishes merely because his earned income is above a certain sum. Furthermore, Mr. Lloyd George has made it clear that he would regard the imposition of a wage limit as incompatible with the principles underlying the bill. It is true that a wage limit is mentioned in the bill, but it does not figure therein as a protection for medical men. It applies solely to persons who are engaged in some other than a manual occupation, and exempts from compulsory insurance such persons, provided their annual wages or salary amounts to more than £160 a year. But included in compulsory insurance are all persons engaged in manual occupations and working for an employer, whatever the wages or salary they receive, and whatever the extent of the private means they possess. In a good many manual trades the weekly wages paid amount to more than £160 a year, and in some trades persons manually employed draw wages as high as £9 or £10 a week, and may be in possesson of other private means. All these persons, whatever they have done hitherto, and however they have provided medical attendance for themselves in the past, will in future compulsorily contribute 4d. a week to the insurance fund, their employers 3d., and the State 2d., and for the aggregate 9d. medical attendance, in addition to other benefits, will be secured to them. But this is by no means the full effect of the bill. All persons may become voluntary contributors, and thus become entitled to have paid on their behalf 2d. a week a head by the State and to receive medical attendance and medicines free, provided that they each pay 7d. a week and can show that they are "engaged in some regular occupation and are wholly or mainly dependent for their livelihood on the earnings derived by them from their occupation." The effect of this very loosely drawn proviso is rendered all the more sweeping because the bill neither establishes nor arranges for the establishment of any method of determining when a given individual comes or does not come within the terms of this proviso. Mr. Lloyd George has himself volunteered the statement that the bill will permit the Governor of the Bank of England to secure all the benefits of the bill, including free medical attendance, for 7d. a week, and there are many other persons possessed of large incomes who could become voluntary contributors. To take only one or two examples, it would seem that a man making two or three thousand a year at the Bar, who possessed no private fortune and spent his income to the full, would be an eligible candidate as a voluntary contributor, since his livelihood depends entirely on his occupation; so, too, would a similar man occupied as the manager of a company and in receipt of a salary of, say, £1,500 a year. Indeed, even if in addition both were drawing say £100 a year from stocks and shares or other resources, it would be impossible to block them out, for they would still be "mainly dependent" on the earnings derived by them from their occupations. But apart from these possibly extreme instances, there is a clause of much importance which must not be overlooked. A person who has been a voluntary contributor for five years or upwards remains entitled to be insured, even though he has ceased to possess the ordinary qualifications of a voluntary contributor. The class to which this clause would apply must be large—persons who, working on an independent footing, improve their position little by little until they become possessed of considerable private resources, and give up work altogether. Indeed, when all the stipulations with regard to the qualifications for insurance, whether compulsorily or as a voluntary contributor, are considered, it it obvious that, apart from the families of insured persons, the number of persons who are necessarily excluded from the benefits of the bill as it at present stands is relatively quite small. It is, in short, quite impossible to predict the effect of the bill, if it passes unaltered, on medical work as at present conducted, and still less its effect on the present capital value of existing practices.

British Medical Journal.

SATURDAY, MAY 20TH, 1911.

THE NATIONAL INSURANCE SCHEME.

LAST week we called the earnest attention of the profession to certain provisions in the National Insurance Bill which seem seriously to threaten the interests of the medical profession, and reports from all over the country show that general practitioners are, to an extent never witnessed before, thoroughly roused and more than discontented that the measure, intended for the good of the working classes in the first place, should have been framed in a way which must inevitably inflict irreparable damage on the medical profession if the provisions affecting its interests do not undergo drastic amendment.

We are not at all disposed in this connexion to make any appeal *ad misericordiam*, even if experience did not show the futility of such appeals. It is an economic matter—an economic question to be settled on business lines. In the past medical men have been given to differing among themselves even on matters affecting their own interests; but, with regard to the fundamental objections felt to the medical aspects of the insurance scheme as it stands to-day, there is, we believe, almost complete unanimity among practitioners engaged in all varieties of practice, and we do not doubt that the Royal Colleges in the three kingdoms and the other licensing corporations will be prepared to support with all the authority and influence they enjoy any well-considered representations which may be made for the amendment of the scheme in the direction desired by the general practitioners to whom they have granted licences.

The replies of the Divisions of the British Medical Association to the questions submitted to them touching matters which, as was anticipated, are directly dealt with in the Insurance Bill are, on fundamental points, unanimous, and this fact is the more significant when it is remembered that in a large number of instances the Divisions, before arriving at a decision, took care to consult medical men resident in their districts who do not happen to be members of the Association. This justifies the statement that failure so to alter the scheme as to provide terms and conditions satisfying the principles which the profession considers of fundamental importance in regard to the administration of medical benefits, will involve a corresponding failure of the scheme as a whole, since medical benefits are an essential part of it. What alterations will be deemed necessary cannot be stated before the matter has been discussed by the Representative Meeting which is to meet on May 31st and June 1st; but, as has already been said, judging from the replies of the Divisions to the questions issued last year, from the resolutions which are now being adopted by meetings of medical men, and from the voluminous correspondence which reaches us, there are some points upon which the profession as a whole feels very strongly. It will, we believe, resist to the bitter end a scheme which will place it under the control of the friendly societies and at their mercy. It may be pointed out that the provision of medical attendance is not among the benefits which form a necessary part of the work of a friendly society, and that the way in which this part of their work has been carried on in the past has aroused a sense of dissatisfaction so strong that compromise on the point presents difficulties which appear at present to be insurmountable. It is felt that when a fresh start is being made under a new national scheme it is undesirable, in the interests of the public and the profession alike, to attempt to perpetuate the present club system. Another point upon which we judge the profession to be practically unanimous is that by whatever way medical attendance is eventually provided under the National Insurance Scheme, there should be reserved to the patient the free right to choose his doctor from among such medical men as may express their willingness to serve under the scheme.

We have already drawn attention to the discrimination in the bill to the disadvantage of the medical profession between medical benefits and sickness benefits in the case of persons who need medical attendance owing to their own misconduct. But this is only one instance of the distinctions that the bill, as drawn, makes to the detriment of medical men. Thus, though sickness and disablement pay cease at the age of 70, an insured person nevertheless remains entitled to medical attendance throughout his life. Again, when it is shown that the reserve funds of an approved society have fallen below the authorized sum, all members of that society are subjected to a penalty, until the missing sum is made up, by having their sickness benefits decreased; but their medical benefits, that is to say their right to receive medical attendance and medicines free, remain unaffected. Another instance is afforded by the clauses relating to leakage of an approved society's funds owing to the existence among its members of an excessive amount of sickness. When the society can prove that this excessive sickness is due to the default of an employer or of some public authority, it can recover from him or from it the increased outlay which is considered to have been caused by its having on its lists an undue number of persons drawing sick benefit. If this provision be just, it would be still more right to make provision for extra payment to medical men in respect of extra work thrown upon them by such excessive sickness. The case of persons who are drawing compensation from their employers in respect of accidents affords yet another instance of a distinction in the way in which the interest of the insurance funds and of medical men are treated in the bill as it stands. Persons in receipt of compensation allowances are debarred from drawing sickness benefit from the insurance funds, but are still entitled to claim attendance from their insurance doctor. Another difference is in respect of the date at which those admitted to membership of approved societies become entitled to sickness and medical benefits respectively. They are debarred from drawing sick pay until they have been members of the society for not less than 26 weeks and have paid not less than twenty-six weekly contributions, and even after the lapse of this time they can draw no sick pay for an illness which commenced during the period in question. Regarding maternity and disablement benefits equal caution is shown. But there are no like stipulations in respect to medical benefits, insured members of approved societies being entitled to medical attendance so soon as they are admitted. It is true that this would not be the case during the first six months after the date at which the Act comes into operation, but after that period

has elapsed the right to medical benefits will commence on the very day of entry into an approved society. The distinction is even more marked in the case of post-office contributors, for these, while debarred from withdrawing in the shape of sick pay any part of the sum standing to their credit until they have made at least fifty-two weekly contributions, are left free to claim medical benefits forthwith, despite the fact that a large proportion of them will admittedly be infirm persons. All these facts must be taken into consideration when it comes to fixing the terms of the contract for medical services.

It is stated that the second reading debate will be taken on Monday, May 29th, and the two following days, that the bill will then be taken in Committee of the whole House (probably in July), and that, if necessary, Parliament will sit well into August in order to pass it.

The personal assurances which, as we go to press, we have received from the Chancellor of the Exchequer as to his intentions with regard to the capitation payment to medical men under the insurance scheme are printed at p. 1202. The profession will not, we feel confident, be disposed to accept as adequate a capitation grant of 6s. a year to include medical attendance and the cost of providing the drugs, dressings, and appliances needed for domiciliary treatment. It will be noted that he recognizes the desirability of allowing choice of doctors to new entrants and favours the institution for this purpose of a wide panel of medical men willing to serve. He recognizes also that in giving its approval to arrangements proposed to be made by any Approved Society or Health Committee with medical men, the Central Insurance Commissioners shall act under the advice of the Advisory Committee, upon which the representation of the medical profession shall be adequate, or, as an alternative, that a special Medical Advisory Committee should be constituted.

MALINGERING AND THE FREE CHOICE OF DOCTOR.

In his speech in the House of Commons on May 4th, the Chancellor of the Exchequer said that he was, "on the whole, inclined to agree that the doctors have got a case for increased payment, not as much as they ask, something far short of that, but, at the same time, something very substantial." In an interview he is reported to have summed up his attitude in the phrase, "This is not a doctors' endowment bill," a phrase not likely to be forgotten.

The profession wants no "doctors' endowment bill"; it makes no appeal even for generosity; it simply demands just recognition of its position as one of the chief working factors on which the success of the sickness insurance depends. It is the failure to recognize this in Germany, and the consequent intolerable sweating of the profession by the *Krankenkassen*, which is responsible for a great part of the public discontent with the German system, a discontent which has been so marked in some places as almost to lead to the breakdown of the system.

In his speech on the first reading of the bill, the Chancellor of the Exchequer said that a curious position had arisen in Germany in that the largest employers had asked to be allowed to increase their share of the insurance premiums, though they now pay more than it is proposed to ask British employers to pay. If Mr. Lloyd George had given some of the reasons for this, it would have been seen that there was really nothing curious about it. Many of the *Krankenkassen* in Germany are managed by joint committees of representatives of the employers and the workpeople. The workpeople are almost universally fighting for "free choice of doctor," as there is little doubt they will in England, but the German employers prefer to appoint a salaried whole-time medical officer of their own, who they imagine will be more under their own immediate control. There is thus a constant struggle for a preponderating voting power in the management committees, and the reason why the employers in many cases desire to increase their contributions is the fact that a larger contribution will entitle them to a larger representation on the committees. If they obtain it the workpeople will be at their mercy as regards the appointment of medical officers as well as in many other matters, seeing that the clubs are practically quite independent of the State in their administration. We mention this not in the least as conveying any criticism of the provisions in Mr. Lloyd George's bill laying down the proportion of the premiums to be paid by British employers, as that is a point which savours of politics on which we do not express any opinion, but simply to show that one of the most important financial details of the German system is being affected by considerations arising out of the question of free choice of doctor by the insured.

Of course, it will be at once retorted that the British bill gives the administration of the medical benefits to the friendly societies, and that the managing committees of these societies must be elected by the members—that is, by the insured themselves—who will thus be able to obtain free choice of doctor, if they so desire, without interference by employers. This is correct as far as it goes, but it is only a statement of half the facts. In the first place the bill, in addition to promising a long list of additional optional benefits as soon as sufficient money can be saved on the working, offers every inducement to the friendly societies to increase the other benefits of the insured at the expense of the medical profession. Perhaps the easiest way of obtaining at present a cheap medical service, utterly regardless of its efficiency, is through a "medical aid association," under which as a rule a young and inexperienced medical man, or one who has failed in other directions or who is banned by his fellow-practitioners, is paid a miserable salary for which he has to devote his whole time to the associated clubs. The members are deluded into believing that they are getting something cheap and saving towards other benefits, and no doubt they are often quite content if they are supplied with a bottle of medicine and a certificate whenever they ask for it. Perhaps the worst feature of such a system is that the whole-time medical officer so employed can put no effective check on the malingerers of the society. It is as much as his position is worth to refuse a certificate of unfitness for work, for if he does a small caucus of discontented members may pack a meeting, and, perhaps without even giving him a chance of defending himself, the doctor is asked to resign on an indefinite charge of neglect. It is not practical to rely, as Mr. Lloyd George seems to do, on the better class of members calling the malingerers to book. They rarely know, or have any opportunity of knowing, of the malingering that goes on, and even if they did, it would have to be of the most open and public kind, instead of the most ingenious and secret, as it generally is, before any member would incur the

odium of complaining of his fellow members. They rarely do so now, and there will be even less inducement to them to do so under the scheme when five-ninths of the fund will be furnished from other sources—the employer and the State.

The position, then, to which we are driven is this: On the one hand, complete control over the medical attendants by employers, such as some of the German employers are aiming at in asking for their share of the contributions to be increased, is strenuously opposed by the workpeople, who perhaps naturally suspect the whole-time medical officers of acting always in the interests of the employers. Though under the British bill it is not proposed to give such power to employers, yet the same feeling of dissatisfaction and suspicion would arise under any system of whole-time appointments for medical treatment by the insurance department. Such whole-time insurance medical officers would always be suspected of making it the chief part of their business to keep down the sickness rates by a harsh hand, in order to please the officials who appointed them, and the temptation to perfunctory and unsympathetic treatment would certainly have most serious results, not the least serious being that, though the apparent sickness rates might for the time be lowered, the true rates would not be touched.

On the other hand, it is equally true that complete control of the medical attendants by the committees of the friendly societies appointing whole-time medical officers would be not less evil in its results than it is in the "medical aid associations" at present. It would be nothing more or less than a perpetuation and vast extension of the most pernicious form of club practice. There need be no hesitation in asserting that in both systems alike—that is, whether the appointments are made by the insurance department itself or by committees of the insured in the friendly societies—the plan of whole-time appointments of medical officers for domiciliary treatment is radically bad.

It has been asserted that the unrestricted free choice of doctor by the insured would tend to encourage malingering, since the people who are inclined to malinger would choose that doctor who was the most lenient in giving certificates. It is maintained also that the case of the man who, without being a deliberate malingerer, is disposed to take too gloomy a view of his physical condition, and to form too generous an estimate of the length of the period of repose necessary before he can return to work, must also be taken into account. It is not of course, suggested that there should be no restrictions and no supervision, but the profession demands that it should be protected in carrying out the most odious part of its duties—that of fearlessly exposing malingering, a protection not given under the present system of management of the friendly societies. In addition, common justice demands that malingerers, when detected, should be severely punished. It is curious to note that, under the present system, men detected in the very act of malingering are, as a rule, only punished by the refusal of the sick pay which they have attempted to obtain by cunning and fraud. Such a punishment does nothing to deter them from trying again. The difficulty of detecting malingering is often infinitely greater than certain public speakers imagine. It is frequently not merely a question of applying medical or surgical methods, but those of the police. The chief practical measures may be summed up in the words supervision, medical inspection, protection of the medical attendant, and severe punishment of the malingerer whenever detected. One of the most efficient remedies has been found to be the institution, as a part of the administrative machinery of any sickness insurance scheme, of a medical committee representative of the profession in the locality. To this committee is assigned the duty of exercising disciplinary functions in respect of members of the medical profession found to be habitually too complacent in putting men on the sick list. It is noteworthy that the United States Commissioner recently reported to his Government that the existence of such a committee was the most effectual remedy against abuse.

We almost feel bound to apologize to the profession for saying so much about this abominable fraud of malingering, and so little about the efficiency of a medical service from a health standpoint, but it is impossible to refuse to deal with those numerous political speakers who seem to think that they will have done their duty if they simply throw a doctor at the people's heads, utterly regardless of whether the people trust the particular doctor thrown at them or not. The profession feels most strongly that there can be nothing approaching satisfactory medical treatment unless there be full and complete confidence between doctor and patient. It is impossible to guarantee this unless free choice of doctor is made a statutory right of the insured. If in any district the insurance doctors were specially appointed medical men in whom for reasons which seemed to him sufficient he felt no confidence, many a member of the working class would not be in a position to forego his right and pay the fees of the private doctor of his own choice, or in other words to pay twice over to obtain his choice of doctor. The bulk of the working classes cannot afford to do this, and to compel them to pay towards a doctor whom they distrust, as would often be the case if only specially appointed medical officers were available for the insured, would be unjust. It would be to punish the poor for their poverty, for it would be a cruel mockery to tell them that they must pay for the club doctor, but that they may at their own further expense engage the doctor of their choice if they wish. The effect on the profession itself of allowing all the insured to exercise their choice of doctor, would be to make it the immediate interest of every practitioner to do the best he could for his patients, undue pandering to the foibles of patients being prevented in the ways mentioned above.

COMPLIMENTARY DINNER TO MR. BUTLIN.

On the initiative of the Metropolitan Counties Branch of the British Medical Association, a complimentary dinner to Mr. Butlin, the President of the Association, has been arranged to take place on June 13th next. A Dinner Committee has been formed with Dr. Lauriston Shaw, the President of the Metropolitan Counties Branch, as Chairman, with Dr. Hugh Ker as Treasurer, and Mr. D'Arcy Power and Dr. William Griffith as Honorary Secretaries. The dinner will take place at the Connaught Room at 7.30 p.m., and the price of the dinner ticket, exclusive of wine, has been fixed at half a guinea. It is hoped that every one who desires to be present will make immediate application to the Honorary Secretaries, Butlin Dinner Committee, 429, Strand, W.C.

ELECTION OF DIRECT REPRESENTATIVE.

Dr. J. A. Macdonald has been elected a Direct Representative of the medical practitioners of

England and Wales on the General Medical Council. The figures, as reported to the meeting of the English Branch Council on May 18th, were as follows: Macdonald, 4,250; Jackson, 4,049; Hawkyard, 1,310; Curry, 497. The total number of votes cast was, therefore, 10,106.

THE MEDICAL ETHICS OF THE DUEL.

An ethical question which is at present exciting attention in some parts of the Continent relates to the presence of doctors at duels. No one denies in Germany or France or other country where the duel is recognized as a means of repairing outraged honour the right of a doctor to fight a duel. The question to which we refer concerns his presence on the "field of honour" in his professional capacity. A case was submitted not long ago to the Medical Chamber of Galicia in Austria. A widow whose son had been killed in a duel lodged a complaint against the doctor who had been in professional attendance, urging that he had been wanting in his duty not only by his presence, but also by failing to give information beforehand to the police authorities and the parents of the combatants. The medical chamber expressed the opinion that, while on the one hand it would be dangerous to leave duellists without provision for immediate treatment in case of a serious wound, on the other the doctor who is informed in confidence that a duel is to take place is bound not to reveal the secret with which he has been entrusted in his professional capacity. Apparently, however, the chamber felt some doubt as to its own judgement, or its decision was not accepted by the profession in Austria. It has therefore been thought necessary to institute an international inquiry on the subject, and the following schedule of questions has, it is said, been sent round: (1) Does not a doctor fail in his duty in accepting an invitation to be present at a duel? (2) Assuming that the doctor may accept such an invitation, is he bound to do so in all cases or only in special circumstances? (3) On the other hand, must he always refuse or only in certain cases? (4) Must the doctor who is informed that a duel is to be fought interfere to prevent it? (5) Is it desirable that the law should be modified and should grant impunity to doctors who are present at a duel? (According to the existing law doctors are liable to the same penalties as the seconds.) (6) If there are cases in which the propriety of the presence of a doctor is open to question, should it not be a rule that he should consult with a professional brother? (7) Is not the presence of two doctors at every duel always desirable, as it is possible that both combatants may be seriously injured? (8) Ought not our professional associations to discuss these various questions? (9) Have you any remark to make based on your personal experience? Replies should be sent to M. Mikolajski, Sniadeckichstrasse 6, Lwow, Austria. We do not know whether these questions have reached this country, but they may interest some of our readers as opening up problems which are unlikely to be submitted for adjudication by any ethical authority in this country. Where duels are fought, however, we certainly think that the presence of a doctor is desirable, even in France, where honour is generally satisfied by the slightest incision of the skin, for an awkward duellist may accidentally inflict an ugly wound. One point of great importance which has often been debated has somehow been omitted from the schedule we have quoted—that is, if a doctor is present at a duel, should he not be bound to sterilize the weapons? A further question may arise. Is he bound, in view of possible contingencies, to sterilize the patient's skin? If so, some definite ritual of disinfection should be framed and made compulsory. There have been doctors in Germany, and to a less extent in France, who have specialized in the surgery of the duello. It is not many years since we announced the death of a highly esteemed practitioner in a German University town who had officiated as surgeon at the students' duels during a period of thirty or forty years. The question whether there should be two doctors in attendance is new to us. We hope it will not be used by any Austrian legislator as confirming the delicate insinuation made by a former medical M.P., that the "profession is out for fees."

THE SENSIBILITY OF THE ALIMENTARY CANAL.

The histological investigations of Gaskell, Langley, and others have proved that all the viscera are supplied with afferent as well as efferent sympathetic nerves, and that under normal conditions the afferent nerves of most organs convey impulses without sensation of any kind being experienced. Common experience, however, has led to the belief that the alimentary canal, though not endowed with the sensation of touch, can yet be the seat of painful and thermal sensations. A feeling of cold or heat in the epigastrium is experienced after swallowing cold or hot food, and under numerous abnormal conditions pain which feels as if situated in the stomach or intestines is experienced. The observations of Lennander and James Mackenzie have thrown doubt upon these common beliefs, and the opinion is now generally accepted that the true seat of abdominal pain is in one or other of the structures of the abdominal wall, which receive their sensory nerve supply from the ordinary cerebro-spinal nerves. In order to test the validity of this doctrine, Dr. Arthur F. Hertz, with the assistance of Messrs. F. Cook, B.Sc., G. Marshall, and E. G. Schlesinger, B.Sc., undertook an inquiry which was carried out in the physiological department and wards of Guy's Hospital. A preliminary account of the results was published in the *Journal of Physiology*, and a more detailed report is contained in the last volume of *Guy's Hospital Reports* recently issued. They find that the stomach, oesophagus, and intestines do not possess tactile sensibility. The oesophagus, but neither the stomach nor the intestines, is sensitive to thermal stimulation. The sensation of heat and cold felt in the epigastrium on swallowing hot or cold fluids respectively is produced in the lower end of the oesophagus. Hydrochloric acid in a strength greater than the maximum ever secreted by the gastric mucous membrane produces no sensation in the oesophagus or stomach, whether normal or ulcerated. Lactic and acetic acids also give rise to no sensation. Alcohol produces a burning sensation both in the oesophagus and in the stomach, but not in the colon. Carminatives produce no sensation in the oesophagus or stomach. Conclusions of clinical importance are that the pain associated with functional and organic diseases of the stomach and duodenum is not directly due to hydrochloric or organic acids, and that it is probable that heartburn is caused by the excessive production of alcohol by fermentation in the stomach.

THE ADVANCE OF PHOTOGRAPHY.

The days are gone by when the amateur photographer was content to present his friends and relatives with a blurred and faded-looking libel of their own countenances, or return home in triumph from his summer holidays with a portfolio full of imperfectly developed snapshots of Continental scenery. The last decade has witnessed countless inventions and improvements in photographic apparatus, and the up-to-date camera fiend has now every possible facility for producing excellent and artistic work. The development of

photography is of importance to medical science, as the camera furnishes records of appearances which not only are accurate and permanent, but enable students, who have not seen a case, to form opinions for themselves without having to trust wholly to the verbal description of the observer. Hence every improvement in photography is directly interesting to all workers in the domain of medical science. A striking proof of the advance made during recent years in every branch of photography is afforded by the Photographic Arts and Crafts Exhibition, organized by Mr. Arthur C. Brookes, which is being held at the Horticultural Hall, Vincent Square, Westminster, from May 12th to the 20th, and in which almost every well-known firm of British photographers is taking part. This exhibition should prove of inestimable value to amateurs and professionals alike, for it offers to them an unrivalled opportunity for studying *le dernier cri* in cameras and their fittings, together with a chance of profiting by the practical demonstrations which are given twice daily at the various stalls. These stalls, artistically arranged and beautifully decorated with a charming collection of photographs, present a bewildering assortment of novelties. Of these it suffices to mention an invisible backing exhibited by the Paget Prize Plate Company, of Watford, which renders negatives free from halation and permits examination during development, a tiny camera which fits comfortably in a waistcoat pocket, and another and larger one capable of automatically developing and fixing the plate after exposure. Many of the most modern inventions are models of ingenuity in the matter of saving both time and labour, and should enable even the busiest of us to indulge more freely in one of the most interesting of hobbies. It should be added that the Congress of Professional Photographers is being held in conjunction with the Arts and Crafts Exhibition from May 15th to the 19th, and various interesting excursions have been arranged for the entertainment of its members. The exhibition is open daily from 10 a.m. to 10 p.m.

MEDICAL MISSIONARY WORK.

TWO meetings in support of medical missionary work were held in London last week. On May 12th Sir Alfred Pearce Gould presided over the annual meeting of the Medical Mission Auxiliary of the Church Missionary Society, which was largely attended. The report read by Dr. Herbert Lankester, lay secretary of the society, showed that a sum of £42,620 had been raised and expended on medical missions during the past year, and that the society had now a staff of eighty-eight medical men and women and fifty-four fully trained nurses, besides a large staff of native doctors and hospital assistants and nurses. The society maintains fifty hospitals in various parts of the world, and a notable feature of the year's progress has been the consolidation of work by rebuilding enlarging, and more fully equipping several of these. The work of medical missionaries has been officially recognized by the bestowal of the Kaisar-i-Hind gold medal upon Dr. T. L. Pennell of Bannu and the silver medal of the same Order upon Dr. H. T. Holland of Quetta. Referring to the influence of medical missions in maintaining friendly relations with the tribes of the North-West Frontier in India, Dr. Neve of Kashmir quoted the dictum of a highly-placed Indian official, to the effect that Dr. Pennell was worth two regiments of soldiers to the Indian Government. The other meeting was held on May 10th, when the Bishop of Shantung took the chair at a public meeting of the Medical Missions Department of the Society for the Propagation of the Gospel. Bishop Montgomery, Father Russell, and Mrs. Scharlieb pressed upon the meeting the value of medical work in connexion with missions, showing how large a door was thus opened. What is true of medical missions as a whole is, we have reason to know, more particularly true of the work of women medical missionaries. They are very specially needed, in such countries as India, where, owing to religious and social prejudices, women are unable to avail themselves of the medical skill of men doctors. It was pointed out that the present serious deficiency of medical women available for mission work led directly to the understaffing of hospitals for women, with its evil effects on the patients, and indirectly on the health of the medical missionary women themselves, causing premature invaliding or death. It is common knowledge that anxiety and worry caused by inability to do adequate work are far more fatal than overwork itself. The Medical Missions Committee of the Society for the Propagation of the Gospel, therefore, appeals to the public, and especially to the young women of the country, to help them. It asks that at least five young women should come forward annually to commence training as doctors, and bases this appeal not only on religious and philanthropic grounds, but also on the ground that medical mission work offers a great field for the observation of disease, and is an excellent training for a young practitioner. Communications may be addressed to the Secretary, Medical Missions Department, 15, Tufton Street, Westminster, S.W.

GOLF AT THE ANNUAL MEETING.

GOLF has now become so popular a recreation at the Annual Meetings that it is almost the only sport which can be arranged for. It is confidently expected that members attending the Meeting at Birmingham will find that the local committee have not been behindhand in catering for the devotees of the royal and ancient game. Practically all the clubs in the neighbourhood have generously placed their courses at the disposal of the local executive, but in one or two cases Saturday afternoons have been excluded. On presentation of their card of membership visitors to the Meeting will be considered members of the club for the day and freed of all green fees. Although there is no first-class course in the district, there are a number which fall little short of that exalted standard, such as Sandwell Park, Olton, Handsworth, Sutton Coldfield, King's Norton, Harborne, and Little Aston. Further afield are Malvern and Leamington. The links at Malvern is one of the oldest in England, charmingly situated at the foot of the beautiful Malvern Hills, and known by name or repute to most golfers. On Wednesday, July 26th, a match, twenty-five a side, is being arranged at Little Aston between the visitors to the Meeting and the Birmingham Medical Golfing Society. The Little Aston course is situated about 9 miles from Birmingham, and about ten minutes' walk from Streetly Station on the Midland Railway; it is, however, hoped that sufficient motor cars will be available to convey players in the match from the Grand Hotel to the club house. The course is rather a new one, but will be found a good test of golf. It is formed out of a deer park once belonging to the well-known Staffordshire family of Parker-Jervis. Mr. J. B. Clarke, of Little Aston Hall, which adjoins the course, has kindly undertaken to provide tea at his house for the players. Members wishing to play in the match should send their names, together with their handicaps, to Dr. Thomas Sansome, Sandwell House, West Bromwich. The Ulster Cup, presented by the Ulster members in 1909, will be played for as usual on the Friday of the Annual Meeting. The play is against bogie. The play will take place on the course of the Handsworth Club, about 3½ miles from

the Birmingham Town Hall, and about 1 mile from Handsworth Wood Station; it can also be reached by tram to the Roebuck Inn, eked out by a cab for about a quarter of a hour at a fare of 1s. 6d. It is hoped to arrange for a motor bus to run at intervals of about one hour from the Grand Hotel to the club house. A special prize has been offered by Mr. Saunders, the captain of the club, in connexion with this competition. Mr. C. A. Palmer, well-known as the runner-up for the amateur championship a few years ago, has kindly offered to entertain the competitors to tea at his house which adjoins the course. The Handsworth course is about 5650 yards in length, the soil is light and springy, the greens are excellent, but a little fast in dry weather; there is an abundance of bunkers most artfully placed to catch a bad shot; but the player who keeps straight and hits a fair ball will be sure of finding a good lie, and get the reward of accurate play. Further details of the match, and of the Ulster Cup Competition will be posted in the reception room at the town hall, and information will be given as to the means of reaching the various links. Sunday play is allowed, without caddies, at nearly all the clubs. There is no play at Malvern on Sundays, and at Leamington only after mid-day.

"FOUR HUNDRED A YEAR."

The Chancellor of the Exchequer, in his handling of the matter of the remuneration which medical men who act under the National Insurance scheme ought to receive, reminds us a little of the Irishman who, when the lady asked him what he thought her age was, said, "Indeed I don't know, but whatever it is you don't look it." He wants to know what remuneration we expect, but tells us that whatever sum we say we shan't have it. It is, however, the fate of the Treasury to deal with money matters, including the question of remuneration for services rendered, and consequently the Chancellor of the Exchequer as its Parliamentary spokesman has had this week to announce to an expectant assembly the salaries to which it is considered they are individually entitled. He had, of course, to make a "flat rate," otherwise it might have fared ill with those members of the House of Commons who sit on that side of the Chamber which is always more sparsely peopled *de jure* if not *de facto* than the other. Every M.P. is to be paid £400 a year for his services to his country. That is the salary to which Mr. Lloyd George considers honourable gentlemen are entitled for working five half days a week for six or seven months a year. If he is in search of a sound basis for estimating the income which medical men should be in a position to earn from the State in return for their services under the insurance scheme, why should he not ground it on this? We will waive the fact that the House only begins to sit at about 3 p.m., because members may have to serve on Committees, and the further fact that the House of Commons does not profess to do any night work, and that nowadays only very occasionally does it break through its rule; and we will take note of the provision that there are to be no travelling expenses—no mileage; and we will ask how our rule-of-three sum comes out. Seven months or thirty weeks, counting five days a week, gives us 150 days, and we get:

$$150 : 400 :: 365 : x,$$

when x = the number of sovereigns to which a medical man working for the Insurance Scheme would annually be entitled, and we find, if we have calculated rightly, that x = £973 6s. 8d., or say, in round numbers, £1,000 a year.

Ridentem dicere verum
Quid vetat?

The newly-erected Cancer Research Institute at the Cancer Hospital, Brompton, will be opened by the Duke of Connaught on Tuesday next at 3 p.m.

The FitzPatrick historical lectures before the Royal College of Physicians of London will be delivered this year on May 30th and June 1st by Dr. Raymond Crawfurd at 5 p.m. each day. The subject of the lectures is The King's Evil. The first lecture will discuss the origin of the belief and the practice under Plantagenets and Tudors, the second lecture will deal with the practice under the House of Stuart.

The Croonian lectures before the Royal College of Physicians of London will be delivered by Dr. Henry Head, F.R.S., at the College, on Tuesdays and Thursday, June 13th, 15th, 20th, and 27th, at 5 p.m. The subject of the lectures will be Sensory Changes from Lesions of the Brain, and Dr. Henry Head desires it to be understood that the whole of the work upon which the lectures will be based has been carried out in conjunction with Dr. Gordon Holmes.

NATIONAL INSURANCE SCHEME.

MR. LLOYD GEORGE'S VIEWS ON CERTAIN OF THE MEDICAL ASPECTS.

As we are going to press we have received personal assurances from the Chancellor of the Exchequer as to his intention with regard to the capitation payment to medical men under the insurance scheme. Mr. Lloyd George has provided a sum of £4,200,000 for the provision of medical attendance, including drugs, dressings, and appliances used in domiciliary treatment The calculation is that this will permit the average payment of a capitation fee estimated at 6s. per head for each person insured for medical attendance and the drugs, dressings, and appliances used in domiciliary treatment. The amount will be increased on the advice of the Central Insurance Office in districts where the Insurance Commissioners are advised that sickness is excessive. In addition he has made arrangements to provide a sum of £1,000,000 annually for the maintenance of sanatoriums, in that way removing from the scope of domiciliary treatment a considerable proportion of phthisical patients who would otherwise make serious calls upon the sum available for domiciliary medical attendance and provision of drugs. He has also provided an annual sum of £1,500,000 for maternity benefit, and out of this it is roughly estimated that one-third will be probably paid to members of the medical profession.

The Chancellor of the Exchequer recognizes the desirability of allowing some system of choice of medical men in the case of new participants in the scheme, and looks favourably upon the institution of a wide panel of local medical men willing to serve.

The Central Insurance Office, in giving its approval to arrangements proposed to be made by any Approved Society or Health Committee with medical men, and in other matters will act on the advice of the Advisory Committee to be set up under the Bill, and the Chancellor of the Exchequer recognizes that on the Advisory Committee the representation of the medical profession must be adequate, or, as an alternative, that a Special Medical Advisory Committee should be constituted.

Medical Notes in Parliament.

[FROM OUR LOBBY CORRESPONDENT.]

National Insurance.

Prospective Appointments.

IN answer to Mr. Douglas Hall, who asked if all appointments made in connexion with the bill for National Insurance against sickness and unemployment would be given to persons who had passed a Civil Service examination, Mr. Lloyd George replied that it would be premature to make any arrangements at the present time. But he would be very sorry to give any pledge which would preclude him from utilizing, if need be, the experience and special aptitudes of medical men or of persons outside the Government service who had been engaged upon friendly society and insurance work. It would be a very great mistake in appointing these officers not to consider those who had had a lifelong experience of insurance work.

Inadequacy of the Rates for Voluntary Insurers.

Mr. C. Bathurst asked the Chancellor of the Exchequer whether, under the National Insurance Bill, any person, however wealthy, would be able under Clause 5 to obtain all the health insurance benefits conferred by the Act, provided that he depended partly for his livelihood upon some regular occupation, while paying as premium only seven-ninths of the amount which he would have to pay to an insurance company; if so, upon what principle was the remaining two-ninths payable by the State; and whether he had considered the effect upon insurance companies of such competition in these cases. Mr. Lloyd George replied that the answer to the first part of the question was in the affirmative, provided the person referred to joined an approved society. A wealthy man who became insured would probably contribute in taxation far more than the amount he received from the State. He did not think the facilities offered to the wealthy were such as to give rise to any competition with insurance companies.

Constitution of County Health Committees.

Mr. Robert Harcourt asked the Chancellor of the Exchequer whether his attention had been called to criticisms of county councillors upon the composite character of the local health committees proposed to be established under the National Insurance Bill, on the ground that there were already too many overlapping authorities of this kind, and suggesting that the work could be well performed by the existing public health committees; whether he had also had regard to similar views expressed in the Minority Report of the Poor Law Commission; and whether he would give favourable consideration to these arguments. Mr. Lloyd George replied that the functions and the funds of the local health committees were such that it was important that the persons insured under the National Insurance Bill should be represented on them.

Home Workers.

Mr. Goulding asked the Chancellor of the Exchequer whether it was intended to include women home-workers, to whom material to be worked in their own homes was given out by employers, in the national insurance scheme; and, if so, upon whom and in what manner would the responsibility for the employers' contribution be fixed. Mr. Lloyd George replied that outworkers in trades specified in any special order made under Part VI of the Factory and Workshop Act, 1901, would be included, and they would be regarded as employed by the person who gave the work out.

Employees Paid Partly by Commission.

Mr. Lloyd George informed Mr. Campion that it was the intention of the bill to exclude the employer from liability in the case of an employee paid partly by regular salary and partly by commission where the salary was less than £160 per annum but the combined income in excess of that amount.

Sick and Disablement Benefits for Aged Persons.

Mr. Barnes asked if it was intended under the Insurance Bill that the sick person over 60 years of age who had contributed for 104 weeks, and who was to be paid 5s. per week as per schedule for twenty-six weeks, would still be paid another 5s. per week thereafter as disablement benefit as long as he remained ill, up to the age of 70 Mr. Lloyd George replied in the affirmative. Clause 9 (3) of the bill only had the effect of reducing sickness benefit, and did not modify the right of persons in the circumstances described to disablement benefit.

Mr. Lloyd George and the Medical Profession.

In reply to a question by Mr. Ormsby-Gore asking the Chancellor of the Exchequer whether he had consulted any representatives of the medical profession with regard to the provisions in the National Insurance Bill affecting doctors, and if so whether he would lay upon the table any correspondence or information given by the medical profession with regard to the medical part of the scheme, Mr. Lloyd George said that he had consulted several members of the profession and had received a deputation from the British Medical Association; he did not propose to lay any of the correspondence on the table. Mr. Lynch asked whether the fact that a loss of something like 30 per cent. on their income would fall on many hardworking practitioners as a result of the scheme. Mr. Lloyd George replied that he could not see how there could be a loss of 30 per cent., since he proposed to divide an increased payment of nearly 50 per cent. among them. He added, in reply to Mr. Brady, that he would be happy to receive a deputation from the Irish Medical Association if they desired to talk matters over.

The Budget.

On Tuesday questions to the Chancellor of the Exchequer were postponed in consequence of his having to introduce the Budget. In his speech on the financial proposals of the year, the only matter of medical interest on which he touched was the provision out of the surplus of last year of £1,500,000 for sanatoriums. No remission of taxation of any importance was made, except slight remissions in connexion with the cocoa duty and licensing duties. The speech concluded with a strong appeal to the House of Commons not to propose any increase of expenditure in connexion with the National Insurance scheme. The Chancellor expressed a definite view that the finances of that measure could be kept within the limits indicated in his speech when introducing it, but proposals of any kind involving increased expenditure he deprecated in emphatic terms. While for this year provision is made to pay members of the House of Commons a salary of £400 a year.

Royal Army Medical Corps.

The Parkhurst Inquiry.

Mr. Douglas Hall asked if Lieutenant-Colonel Donegan had been relieved of the command of the Royal Army Medical Corps at Parkhurst, Isle of Wight; and, if so, for what cause. Mr. Acland said that this officer had been relieved of his charge by the General Officer Commanding-in-Chief pending investigation by the Court of Inquiry ordered on the recent case of suicide. Asked if it was not invidious to remove an officer before a Court of Inquiry came to a decision, Mr. Acland said it depended on what reason there had been for it. In this case he thought it was perfectly justified. Mr. Ward then asked if the reason was that he had called attention to the overwork, and Mr. Acland said that had nothing whatever to do with it. It was considered desirable that during the Court of Inquiry he should not continue to hold his former position. He would undertake that officers and non-commissioned officers giving evidence should not have their future prejudiced.

Pension Rules.

Major Archer-Shee asked whether Lieutenant-Colonel Swabey, late R.A.M.C., was retired on a pension on attaining the age of 55 years, on February 4th, 1911; whether this officer had served for twenty-nine years and three hundred and sixty-four days; whether he had only been awarded a pension on the twenty-five years' service scale, and not on the thirty years' service scale, a difference of about £45 per annum. Mr. Acland replied that the facts were as stated in the question. It was not possible to retain this officer in the service beyond the age of 55 fixed for his

retirement by the Royal Warrant of Pay, the terms of which were absolute. It was therefore impossible to make a concession. Asked further whether, including his probationary service, this officer had not really served over thirty years, Mr. Acland said that this officer undoubtedly had had very bad luck, but it was impossible to make exceptions under the terms of the Royal Warrant. It was the practice to adhere absolutely to the terms of the Royal Warrant. The case had been very fully considered by the Selection Board. It was impossible to do anything more.

Medical Officers of Health.—Sir Charles Henry asked the President of the Local Government Board if he would give instructions that, in the readjustment of districts in counties for sanitary supervision, those whole-time medical officers of health, who previously to the re-arrangements held appointments in these districts, should receive consideration in the selection for medical officers for the newly formed district. Mr. Burns said that the selection of the medical officer of health rested with the local authority making the appointment, and the function of the Local Government Board was limited to approval of the appointment. It was shown by experience that local authorities, when making fresh appointments upon the formation of new combinations, did give consideration to the claims of officers who had previously given whole-time service, and he doubted whether any general recommendation from the Local Government Board was necessary. He of course entirely agreed with the view that, in making fresh appointments, the claims of any efficient officers who might be displaced in consequence of the new arrangements should receive full consideration.

Glasgow Medical Inspector of Factories.—In reply to Mr. Watt Mr. Churchill said that Dr. Alexander Scott had been appointed certifying surgeon for the Bridgeton district of Glasgow by promotion from the corresponding appointment in the Central district, which he previously held, and which was now vacant. He had wide experience of industrial accidents and diseases, and had rendered service of exceptional value for many years, both as certifying surgeon and by his voluntary efforts to combat the dangers of industrial employment. Certifying surgeons were appointed without regard to their political views.

Imported Milk.—Asked by Captain Faber as to the testing of imported milk for tubercle, Mr. Burns said that he understood that no milk was being imported into this country at the present time. In the past, samples had been taken with a view to examination for tubercle. As these examinations took some time to complete, it was not practicable to detain the milk pending a report, but the samples which had been examined in this way had given negative results.

Housing in South Northants.—In answer to Mr. Kellaway, who called attention to the report of the Medical Officer of Health for Brackley, Northants, Mr. Burns said that he had addressed a communication to the town council at Brackley pressing on it the necessity of further considering the question of providing houses under Part III of the Housing of the Working Classes Act, 1890. The Housing, Town Planning, etc., Act, 1909, effected important amendments designed to facilitate the compulsory acquisition of land by local authorities for the purpose of the erection by them of houses for the working classes, and it had not been shown that the existing powers under that Act were not sufficient to meet all the ordinary circumstances.

Small-pox Epidemic (Madras).—Mr. Pickersgill asked a question on this subject, pointing out that the deaths had been 40 in January, 60 in February, and 82 up to March 18th—a fatality-rate of 360 per million—while the annual number of public vaccinations had been more than three times greater than in London. Mr. Montagu replied that the Secretary of State regretted that the city of Madras was suffering from an epidemic of small-pox. He understood that the corporation had opened isolation hospitals, and that a special staff was employed under the health officer to carry out measures of disinfection and to bring cases to light. Owing to the form in which the Madras vaccination returns were kept, exact comparison with those of London was not possible. As an example, he might state that revaccinations were not included in the London statistics.

Deaths from Plague in India.—Last week, in answer to Mr. Morrell, Mr. Montagu submitted the following figures:

Year.	Plague Deaths.	Percentage of the Population.	Number of Inoculations.	*Expenditure.
				£
1903	84,499	0.177	964	13,117
1904	179,082	0.375	3,258	5,283
1905	383,802	0.805	6,411	7,787
1906	69,660	0 146	1,846	5,245
1907	328,862	0.690	34,169	22,533
1908	22 878	0 048	133,666	32,163
1909	38,394	0 080	97,893	8,216
1910	158,057	0.335	71,033	7,000 (approximate)

*Includes expenditure from general revenues, but does not include expenditure incurred by local and municipal bodies from local and municipal funds. The figures given in this column are for the financial year ending 31st March of the year following that to which the corresponding figures in the other columns relate.

Vaccination.—Mr. Weir asked a question on Monday with reference to the arrest of Staff Quartermaster-Sergeant Stickney for declining to have his children vaccinated, and Colonel Seely replied that the facts of the case were as follows:

Prior to proceeding to South Africa the army medical officer at Leeds, acting under paragraph 1,502 King's Regulations, examined Mrs. Stickney and the four children, and on her assertion that they had all been successfully vaccinated, duly certified them fit. Before embarkation it was discovered that Mrs. Stickney's statement was untrue, and that the family had never been vaccinated. Staff Quartermaster-Sergeant Stickney was duly informed that under the Regulations he could not take his family unless they were vaccinated, and he then signed a certificate to the effect that he quite understood that he was permitted to embark his children only on condition of his allowing them to be vaccinated on board. This permission was a special concession to Staff Quartermaster-Sergeant Stickney, and was contrary to the Regulations which enjoin vaccination prior to embarkation. On board the transport, when the medical officer directed the children to attend for vaccination, Staff Quartermaster-Sergeant Stickney refused to carry out his undertaking. He was accordingly arrested on arriving at Capetown by the general officer commanding there for his conduct in regard to the certificate, but on the case being reported to the general officer commanding-in-chief he was released without prejudice to rearrest under the King's Regulations. On reaching Tempe he deliberately, in defiance of orders, took his family into public quarters. For this he was tried by court-martial and sentenced to loss of seniority. As, however, the proceedings of the court-martial had been subsequently quashed, owing to technical irregularities, he was now relieved from all consequences of his trial.

The Lunacy Bill.—The Lunacy Bill came on for second reading last week in the House of Lords, and Lord Courtney of Penwith moved an amendment to the first schedule with the object of giving a discretion to the Lord Chancellor to appoint a woman as a paid as well as an unpaid Commissioner. The Lord Chancellor agreed that it would not be easy to overstate the importance of having women associated with the care of the insane, and he unreservedly assented to the principle of the amendment; but he could not accept the amendment at the present time, this being a bill of a temporary character. The amendment was by leave withdrawn. The bill then passed through Committee.

The University of Wales Bill (No. 2).—This bill was presented and read a first time on May 10th. It seeks "to extend the provisions of the Medical Acts to the University of Wales and graduates in medicine and surgery thereof." It is promoted by Sir D. Brynmor Jones, Lord Ninian Crichton-Stuart, Sir Francis Edwards, Sir Herbert Roberts, Colonel Pryce Jones, and Mr. Ormsby Gore.

Vaccination Acts (Repeal) Bill.—A bill to repeal the Vaccination Acts was presented last week by Mr. Black.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

LONDON COUNTY COUNCIL.

Medical Matters and the Education Estimates.

THE London County Council on May 16th considered the education estimates for 1911–12, involving expenditure amounting to £4,999.385, an increase of £232,205 upon the figures for 1910–11. The following were the principal items of medical interest: Meals for necessitous children, £89,545; medical inspection and treatment, £39,960; cleansing verminous children, £2,205; maintenance of open-air schools, £3,270; special schools for blind children, £9,915; deaf, £17,415; mentally defective, £56,950; physically defective, £42,480; epileptic, £2.440. It was explained that an increase of £26,400 under the head of "provision of school meals" was due to the higher cost of administration and the larger number of children fed during the summer. An increase of £20,885 in respect of medical inspection and treatment was accounted for chiefly by the employment of additional school medical officers, and to the treatment of children for eye, ear, and skin ailments. From January to December, 1910, a sum of £185 was recovered from parents in respect of the cost of medical treatment, but the work of assessment of charges was considerably in arrear. With regard to provision still to be made for medical treatment it was estimated that some 92,000 children would require treatment for eye, ear, nose, and throat ailments, and some 6,000 for skin ailments, of whom 3,500 would be suffering from ringworm. On the assumption that one-third of the general cases and two-thirds of the ringworm cases would be treated apart from the Council's scheme, the Council should make provision for treatment of 62,000 eye, ear, nose, and throat cases, and 1,200 ringworm cases. The cost at the existing hospitals and treatment centres worked out at 4s. 6d. a case in respect of eye, ear, nose and throat cases, and 17s. 10d. for ringworm cases. The cost of 62,000 cases at 4s. 6d, amounted to £13,950, and of 1,325 ringworm cases at 17s. 10d. to £1,180, or a total of, say, £15,000. As to dental treatment, provision amounting to £1,170 was made for existing schemes at Poplar and Deptford, and £5,000 was also included provisionally for further experimental dental surgeries. This sum would also allow of general provision being made for a small portion of the year for all cases of London children requiring treatment.

In the course of a general debate an amendment was moved that a supplemental estimate of £5,000 be approved in respect of dental treatment. Mr. Hayes Fisher replied that until the Government gave the Council larger subventions towards the cost of this new work any increase must be steadily opposed.

Mr. A. A. Allen, M.P., Mr. H. E. A. Cotton, and others rejoined that so important a matter should not be delayed pending the settlement of the intricate question of the relations of local and central authorities, but on a division the amendment was defeated by 54 votes to 50.

The estimates were ultimately approved.

Medical Inspection and Treatment.

In accordance with the arrangements recently approved by the Board of Education, the Council renewed the agreements with the several hospitals for medical treatment until the "appointed day," December 31st next. In the case of the Royal Free Hospital, the Education Committee advised that this hospital was not conveniently situated, and the agreement for the treatment of 50 ringworm cases was only renewed until September 11th next. The Committee also considered that, having regard to the facilities available in Hampstead for medical treatment of children at dispensaries and sick benefit clubs, the arrangements with the Hampstead Public Medical Service respecting 400 children should not be continued beyond the term of the present agreement. Offers by the governing bodies of the Kensington and Fulham General Hospital, the Metropolitan Hospital, Kingsland Road, and University College Hospital, to enter into medical treatment agreements with the Council, were refused on the ground that the hospitals were not conveniently placed for the purpose.

Board of Education and Dental Treatment.

The Board of Education has approved till December 31st arrangements for providing dental treatment at St. George's Dispensary, Blackfriars Road, S.E., subject to a report on the working of the scheme being submitted sufficiently early to allow of full consideration before the agreement comes up for renewal. The Board expressed some doubt whether, for the same expenditure as was contemplated, the Council could not have provided a scheme of dental treatment, worked entirely under its own control, which would have been more efficient and comprehensive. The Board, however, recognized that the dispensary scheme was experimental, and the experience gained by its means would undoubtedly be valuable to the Council.

London Milk Supply.

The Public Health Committee reported that of 760 samples of milk taken at London railway termini during the quarter ended March 31st, 106, or 13.9 per cent., had been found to be tuberculous. The total number of samples taken since the General Powers Act, 1907, came into force was 6,523; the examination of 5,698 of these samples had been completed, with the result that 640, or 11.2 per cent., proved to be tuberculous. The committee had considered once more the steps the Council should take in order to secure a pure milk supply for London. Several attempts had been made to insert in the annual General Powers Bill authority to deal with milk which at the time of entry into London was contaminated with dirt. These clauses had been struck out from time to time, on the ground that the powers sought should not be the subject of piecemeal legislation, but should be dealt with in a bill for the whole of the country. Such a bill was introduced by Mr. Burns in 1909, but was not proceeded with, although the question was one which should be settled without delay. The Council's present powers were inadequate because of the difficulty of tracing contaminated milk to its source in the absence of laws applicable to the whole country.

The Council passed a resolution urging the President of the Local Government Board to introduce a Pure Milk Bill in the present session of Parliament.

THE SHADWELL CHILDREN'S HOSPITAL.

On Tuesday, May 9th, the Princess Marie Louise of Schleswig-Holstein opened an extension of the out-patient department and an open-air shelter at the East London Hospital for Children, Shadwell. Her Royal Highness was received by Colonel Charles Needham, the Chairman of the Board of Management, Dr. Eustace Smith, Senior Physician, and Mr. R. Lucas, of the Reception Committee. Viscountess Falkland and Miss Fraser, of the Ladies' Association of the Hospital, the Bishop of Stepney, the Mayor of Stepney, Miss Row, the Lady Superintendent, Mr. Wilcox, the Secretary, and many past and present members of the medical and nursing staffs, and others interested in the hospital were present. After the additional premises had been inspected, Colonel Needham gave a brief address, in which he warmly thanked Her Royal Highness for her continued interest in the hospital, she having performed a similar function at the opening of the new infectious block a few years back. After prayers for the success of the undertaking had been offered by the Bishop of Stepney, the Princess was presented with a key, and she pronounced the recent extensions to be open. On the motion of the Mayor of Stepney, seconded by the Earl of Errol, a vote of thanks was passed to Her Royal Highness by acclamation. Afterwards she visited each ward of the hospital, displaying a warm interest in the little patients.

The extension of the out-patient department includes a spacious operating theatre, with preparation, sterilization, and recovery rooms, and two consulting-

rooms of ample size for the senior and junior casualty officers. The total cost of the new buildings has amounted to £5,000, the more moderate proposals of the board of management not having met with the sanction of the authorities of King Edward's Hospital Fund, whose requirements involved the purchase of additional land and the removal of the mortuary to a more distant site. The chairman stated that the out-patients last year numbered more than 31,000, with a total attendance of considerably over 90,000. Such numbers involved the performance of very numerous minor operations in the out-patient department itself. Formerly these had to be performed in the ordinary consulting or adjoining dressing rooms, and in many instances a child might have to undergo an operation in the presence of another who had not fully recovered from an anaesthetic. The additions will obviate this undesirable condition of affairs. The new rooms for the casualty officers, too, will be welcome, as they have hitherto worked under conditions that conduced neither to efficiency nor comfort. The new permanent open-air shelter is adjacent to the topmost ward, and will accommodate six beds with ease, and perhaps an additional couple on emergency. It replaces a temporary one, which, with its many imperfections, had proved of pronounced and unmistakable benefit in numerous complaints, besides those arising from tuberculosis. For both the permanent and temporary shelters the hospital is indebted to the generosity of the Ladies' Association.

Royal Photographic Society's Exhibition.

Examples of radiography occupy a considerable space in the scientific section of the Royal Photographic Society's Exhibition, which is open during May at Prince's Skating Club, Knightsbridge. Dr. C. Thurstan Holland, of Liverpool, has obtained a medal for two radiographs, one of them showing bismuth food in an elongated transverse colon, and the other the bismuth meal in a stomach with hour-glass constriction. The same worker shows several radiographs of renal calculi, and one example of the result of injecting 15 per cent. collargol solution into a cystic kidney. Each cyst and the ureter are shown filled with the solution, which is opaque to the x rays. There are several examples of instantaneous radiography. One of these, illustrating tuberculous disease of the lung, had an exposure of one-hundredth of a second. It is exhibited by Dr. Robert Knox, who has several other radiographs in the section. Dr. G. H. Rodman contributes a series of three radiographs illustrating the advantage of an intensifying screen, while Dr. G. T. Haenisch, of Hamburg, has two radiographs proving the diagnostic value of rectal injections of bismuth enemata. The same worker, apparently (although bearing a different initial in the catalogue), is responsible for a number of lantern slides in another section, the result of some work with a Roentgen-cinematographic apparatus of his own design, showing the peristaltic wave moving down the great curvature of the normal stomach. Ten plates were taken in eighteen seconds. There are several exhibits of dental and bacteriological interest in the exhibition, of which, of course, the scientific section only forms a comparatively small part.

MANCHESTER AND DISTRICT.

The National Insurance Bill.

The National Insurance Bill has caused something like a feeling of consternation in medical circles of Manchester, Salford, and the district. It is not only the scope of the bill that has produced this feeling, but what is felt to be the absolute and total disregard of the interests of the medical profession displayed in it. So far as can be gathered there is a practical unanimity on at least three points which are regarded as fundamental, though numerous other suggestions for the amendment of the bill are made. The three points on which all seem to be agreed are, first, to support the principle of free choice of doctor by the insured; secondly, to oppose the administration of the medical benefits by the friendly societies; and thirdly, to demand as remuneration something considerably better than a capitation fee of 5s. a year. As regards the first point, it appears that many present club members have for some time been clamouring for free choice among the doctors of their neighbourhood, and there is little doubt that in its determined opposition to whole-time appointments the profession will be assisted by the great bulk of the working class.

With regard to the opposition to the friendly society management of medical benefits, it seems more than probable that a very serious position for the public will arise if the Government in any way relies on working arrangements being possible between the friendly societies and the profession of the district. There are several large towns in Lancashire with a population of considerably over 100,000 where no medical clubs of any sort, friendly society or not, can obtain a footing. Not a single doctor can be obtained in spite of attempts by various friendly societies to import doctors and to engage them as whole-timers. On the question of fees there is a very decided preference for the system of payment per visit. The statement which members of the Government are understood to have made, that payment per visit is impracticable, is by no means accepted as final, and full warning is given that the utmost efforts will be made to compel the adoption of that system. The sum of 5s. which has been mentioned as a capitation fee for medical attendance is regarded with disgust. Even though it only covered attendance for healthy adult males, it would not be regarded as adequate, but if "bad lives," chronic cases, and persons whose illness arises from their own misconduct are to be included, it is freely stated that more than double that sum would be insufficient. The very suggestion of a doctor having to attend Saturday night "drunks" and Monday "headaches," together with tedious cases of gonorrhoea or syphilis for 5s. a year is regarded as an insult to the profession.

It has been arranged to hold a special meeting of the whole of the members of the Lancashire and Cheshire Branch in the Memorial Hall, Manchester, on Wednesday, May 24th, at 4.30, to consider the Insurance Bill as it affects the medical profession, and it is hoped that every possible endeavour will be made by every practitioner to be present. The profession knows its own unanimity on some of the essential points of the bill, but it is necessary to demonstrate to the Government that medical men are in earnest on these points.

The Care of the Feeble-minded.

A conference arranged by the Manchester and Salford Sanitary Association was held last week to consider the question of the feeble-minded. The subject was introduced in two papers, the first by Dr. Tredgold, who dealt in a comprehensive way with the whole problem, and the other by Miss Dendy, who dealt more particularly with the methods of training and care for the feeble-minded in colonies. Dr. Tredgold specially urged first that the Defective and Epileptic Children's Education Act of 1899, or some other system of training, should be made compulsory; secondly, that county councils should be compelled to provide suitable homes, institutions, or colonies, for the reception of mental defectives after training; and, thirdly, that power should be obtained for the detention of mental defectives in these institutions. The conference passed the following resolution:

> That there is urgent need for legislation on the lines of the recommendations of the Royal Commission, for the purpose of obtaining the maintenance and segregation of the feeble-minded at the cost not of the localities which erect schools and homes for them, but at the cost of the State.

LIVERPOOL.

Meeting of the Irish Medical Schools' and Graduates' Association.

The Irish Medical Schools' and Graduates' Association, which holds its annual meeting and dinner in London on St. Patrick's Day, has during the last two

years adopted the practice of holding an additional meeting in some provincial centre. This year the association has accepted the invitation of certain Irish graduates resident in Liverpool to pay a visit to that city, and a strong local committee has been formed to make arrangements for the meeting, and to collect funds for the entertainment of members coming from a distance. Of this committee Dr. T. R. Bradshaw, president of the Liverpool Medical Institution, who is a graduate of the University of Dublin, was chosen chairman, Dr. Heaney (University of Dublin) was chosen secretary, and Dr. W. T. D. Allen, (Royal University of Ireland) assistant secretary. The meeting will take place on Saturday, May 27th, the London contingent being timed to arrive at 2 20 p.m., a special saloon carriage being provided on the 10.30 a.m. train from Euston. The business meeting, which will be brief and purely formal, will take place at the Exchange Station Hotel at 2.45 p.m., and about 3 p.m. the members and the ladies who accompany them will be taken for a short cruise on the river as the guests of the local committee, and will be supplied with tea on one of the Atlantic liners by the courtesy of the directors of the company. At 7.15 p.m. the members and others attending the banquet will be received at the Exchange Station Hotel by Sir Charles Cameron, M.D., C.B., Medical Officer of Health for the City of Dublin, who is President of the association this year; and by Dr. and Mrs. Bradshaw. At 7 30 the banquet will take place in the hotel, Sir Charles Cameron being in the chair, and a number of invited guests are expected, including Lord and Lady Macdonald, Sir Thomas and Lady Myles, Professor Kuno Meyer, the newly appointed Professor of Celtic in the University of Berlin, and Miss Meyer, Dr. and Mrs. Glynn, and others. On Sunday morning there will be a special short service in the new beautiful Lady Chapel of the cathedral, the only part of the building so far completed, and, if possible, the members will be offered an opportunity to view the building in progress of construction, and there will be a celebration of High Mass in the Pro-cathedral. In the afternoon an excursion has been arranged to enable the members and their friends to visit Chester, a special saloon being attached to the 1.50 p.m. train. A personally conducted tour of the antiquities, the walls, and other historical relics of the ancient city has been organized, with the kind co-operation of the municipal authorities of Chester, and there will be an opportunity of attending the afternoon service in the cathedral. The return to Liverpool will be at 7 p.m., and a special late dinner will be served at the Exchange Station Hotel. Special favourable terms are granted to members and their friends spending the week-end at the hotel, and a large and enjoyable gathering is anticipated. The banquet is open to all medical practitioners who hold an Irish qualification or who have been attached to an Irish school or hospital. The credit of inaugurating the meeting rests mainly with Dr. J. J. O'Hagan, who has been for some years a member of the Association, and has taken great interest in its proceedings.

LEEDS.

DEATH OF SIR NATHAN BODINGTON,
Vice-Chancellor of the University of Leeds.

IT is with much regret that we have to record the death of Sir Nathan Bodington, Vice-Chancellor of the University of Leeds. Born sixty-two years ago at Aston, near Birmingham, he was educated at the Birmingham Grammar School and at Wadham College, Oxford. He became a Fellow of Lincoln College in 1875, and retained his Fellowship till 1885, when, as he was not in Holy Orders, it expired. He was appointed one of the Assistant Masters at the Manchester Grammar School in 1873; from there he passed to Westminster School, which he left in 1875 to become Classical Tutor at Lincoln College and Lecturer at Lincoln and Oriel Colleges, a position which he retained till 1881, when he was appointed Professor of Classics at Mason College, Birmingham. The following year he was selected to fill the position of Professor of Greek and Principal of the Yorkshire College. When the disruption of the Victoria University took place, and when as one of the results the University of Leeds was inaugurated, Dr. Bodington, as he then was, was appointed by the Crown to be the first Vice-Chancellor. For the long period, therefore, of thirty years his work was identified with the growth and development of this institution. He saw it almost at its beginning, for the existence of "Yorkshire College of Science" dated from only a few years prior to his appointment; in all the changes and in all the wonderful developments which have come about he took an active part, and devoted himself with single-minded intensity of purpose to the furtherance of the best interests of the university. The position of Vice-Chancellor of a modern university calls for the possession on the part of the holder of the office of many diverse talents and gifts. He should be a man of broad and catholic views and tastes, who can hold the balance between the academic and utilitarian aims of the university, or it would be better to say, convince every one that there is no real or necessary antagonism between these two perfectly appropriate aspirations; he should have a general knowledge of the work of the different faculties; he should represent the university with dignity on all public occasions, both in its own city and elsewhere; in many respects he should be a bond of union between the university and the public, and above all he should be a leader of men. These are hard conditions to impose before admitting that a man can have been a success, but it is to the undying credit of the late Vice-Chancellor that, with an apparently purely classical education, and with tastes in the first instance largely literary, without, it may be said, precedents to guide him, and working under condition of constant change, he was able to show himself possessed of so many of the natural and acquired gifts which have been indicated. Sir Nathan, who received his title in 1908, was the recipient of many honours; he was an Honorary Fellow of Lincoln College, and held the honorary degrees of Litt.D.Vict. and LL.D.Aberd. By all the members of the staff of the university the Vice-Chancellor will always be held in affectionate remembrance as a man of the highest integrity, of great charm of manner, an admirable Chairman of the Senate, and a wise guide in the many difficulties which have had from time to time to be dealt with. The sympathy of all who are connected with the university, of an unusually large circle of private friends and of the public of Leeds generally, will be accorded in a very great measure to Lady Bodington, who during her brief married life has done so much to endear herself to all with whom her university connexion has brought her in relation, and whose entry into university circles on her marriage was doubly welcome from the fact that she was the daughter of the late Sir John Barran, for many years the treasurer of the college and of the university.

WARWICKSHIRE.

COVENTRY SCHOOL CLINIC.

A SCHEME for a limited school clinic which has been adopted by the Corporation of Coventry, and has now received the sanction of the Board of Education for twelve months, possesses points of interest. Its essential features are: (1) That it is only proposed to deal with certain defects of school children which do not appear to be adequately dealt with by existing agencies; (2) it avoids the obnoxious system of training children early in their life to resort to charities; and (3) it is, it is thought, so arranged that it will not be carried on in opposition to the practice of the local medical profession.

The three classes of defects proposed to be dealt with are (1) eye defects, (2) ringworm, (3) teeth defects.

As regards eye defects, it is proposed to appoint an oculist; a properly equipped room will be provided, and he will attend on specified days, not more than

once a week, the number of days to be determined by the number of cases requiring attention. Children with eyesight defects are referred to their medical attendant; a counterfoil certificate will be provided for the medical attendant to sign if he desires the case to be referred to the clinic. This counterfoil certificate will be sent to the school medical officer, who will make the appointment for the oculist. To meet the requirements of the Education (Medical Treatment) Act of 1909 a statement is intended to be submitted to the parent, somewhat on the lines of the scale adopted by the London County Council in regard to the recovery of expenses; the recovery of these charges will be in the hands of the secretary of the local Education Committee. The appointed oculist is to be paid at the rate of 5s. per case referred. It is estimated that a maximum of 200 cases will be referred per annum.

For ringworm an *x*-ray specialist is to be appointed at a remuneration of 3 guineas per half day; the appropriate room and apparatus is to be provided by the local education authority. As with eyesight defects, ringworm cases are to be referred to their medical attendants with a notification to the effect that chronic or appropriate cases may by them be referred for *x*-ray treatment. Appointments for this treatment will be made by the school medical officer; the maximum expenditure sanctioned for this work is £228 8s. per year.

For teeth defects a whole-time dentist at £300 a year is to be appointed. It is fully appreciated locally that this single appointment will be inadequate to deal with the 16,000 children attending the schools. It is regarded as experimental and educative. A room equipped with the necessary apparatus will be provided by the authority. The cases to be dealt with—mainly in the region of conservative dentistry—will be selected partly by the results of the systematic medical inspection of children and partly by the advice of the dentist appointed.

The supervision of the clinic is in the hands of the school medical officer, who is here the medical officer of health.

Ear and throat defects were considered, but owing to the difficulties existing in providing facilities for operation this matter has been postponed for future consideration.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS.]

Poisoning by Arsenic in Arran.

It has been established beyond doubt that the mysterious malady which broke out in Lamlash and other parts of Arran about three weeks ago, and from the effects of which some of those attacked are still suffering, was due to arsenical poisoning. It has been ascertained by analysis that the bread issued from a local bakery on a certain date contained a considerable quantity of that poison. How it came to find its way into the bread is now the subject of searching investigations by the authorities.

The history of the outbreak covers a period extending over a few days at the end of April. At first there were only a small number of cases, but gradually the number increased, and on April 27th the outbreak developed with startling rapidity, assuming the proportions of an epidemic. At least fifty persons were affected, the greatest number of them living in Lamlash. In all cases the symptoms were similar, there being sickness and vomiting, with acute abdominal pains of the nature of colic. In most of the serious cases there was oedema of the extremities, and puffiness under the eyes. Persons of all ages were affected. There has been one fatal case, that of a young child; the body has been exhumed, and certain organs forwarded to Edinburgh for examination by Dr. Harvey Littlejohn.

The reports on the samples of the suspected bread, analysed on behalf of the authorities by Dr. Hunter, Public Analyst for Midlothian, have not been made public, but it is not concealed that they reveal the presence of a considerable quantity of arsenic. No report has yet been forthcoming as to the result of the examination of the internal organs of the child whose body was exhumed, so that whether the child's death, the only fatality attributed to the malady, is due to eating the affected bread or to some other ailment, remains, as yet, a matter of uncertainty.

Unqualified Medical Practitioners.

Dr. Norman Walker, the direct representative for Scotland on the General Medical Council, in an address delivered at a meeting of his constituents in the Glasgow district, dealt with the duties of the Council and the limitations of its powers. Speaking of the most important thing, from the point of view of the general practitioner, which the Council had done since he had been a member had been the appointment of a committee of inquiry into unqualified practice in the Colonies and dependencies of the empire. The Council had as a result of its inquiries resolved that, as it was of opinion that the present Medical Acts did not sufficiently enable persons requiring medical aid to distinguish qualified from unqualified practitioners, and that it was contrary to the interests of the public that medical and surgical practice should be carried on with impunity by persons holding no recognized qualifications, the Government should be requested to take steps for the appointment of a Royal Commission to inquire into the evil effects produced by the unrestricted practice of medicine and surgery by unqualified persons. That resolution had been communicated to the Privy Council, which had transmitted it to the Local Government Board; the Board had sent out circulars of inquiry, and had issued a Blue Book containing the replies. The next step to be taken would be considered at the approaching session of the Council.

The Infectious Hospital, Inverness.

Some confusion has been caused by a notice in the lay press in which it was stated that the Local Government Board was holding an inquiry into the management of the Northern Infirmary. The object of the Board's inquiry was the Infectious Diseases Hospital, where a case of cross infection had occurred, and the parent of the child (who happened to be a solicitor) formulated a complaint and the Local Government Board instituted an inquiry. During the past year there was a serious outbreak of diphtheria, and there being at the same time cases of infectious fevers of different kinds in the wards, there was some difficulty in isolating the different classes of cases, owing to the limited accommodation, with the result that three complaints were lodged with the Local Government Board reflecting on the management of these wards. The directors, on receiving the complaints, made a thorough investigation, and found that there was no substantial ground for them, and that the staff, nurses, and attendants had all done their best to cope with the somewhat trying circumstances which had unexpectedly arisen. The Local Government Board also instructed their officer, Dr. Dewar, to make an investigation into the administration of the wards. In his report Dr. Dewar states, with reference to the adequacy of the nursing staff, that while it would have been better had more nurses been engaged, he is not satisfied that it has been proved that the patients suffered in consequence. In summing up the results of his inquiry he states that the general effect of it was to show that, apart from its defects in structure and accommodation, there was nothing seriously wrong with the general administration of the fever wards of the infirmary. The medical officer of health of the burgh of Inverness, in commenting on the Local Government Board inspector's report, states:

> I would say that I very much regret that the complaints were not forwarded, in the first instance, to the local authority for their inquiry and observations. I am informed that the Local Government Board usually adopt this procedure. Why it was departed from in this instance I am unable to say. Such a course would have obviated an inquiry which, with all respect to the Board, does not appear to me to have been necessary, and which gave an importance and a publicity to the complaints as

to administration which were not warranted. Apart from the complaints regarding structural alterations, concerning which no report was required, the complaints were trivial and unjustified. They show the blackest ingratitude towards an institution which, instead of being censured, deserves the best thanks of the community for undertaking the charge of infectious cases in the interests of the burgh. The complainers in particular should be grateful for all the care and attention which I personally know was bestowed on their children. I have nothing but the highest praise to offer to the directors and to the medical and nursing staffs for so admirably administering the isolation wards during a very trying period.

EDINBURGH AND GLASGOW MEDICAL CLUB.

An unusually large number of members met together in the Central Station Hotel, Glasgow, on May 12th, at the twentieth annual dinner of the club. Dr. J. Crawford Renton was in the chair, and to celebrate the coming of age of the club, presented a silver mallet to be used by his successors in the chair. During the evening a number of new members were elected.

Ireland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

DUBLIN CITY BACTERIOLOGIST.

SOME months ago the Corporation of Dublin determined to appoint a city bacteriologist, and later from amongst a large number of applicants elected Dr. Matthew Russell. The Local Government Board when called on to sanction the appointment refused to do so on the grounds that the post was of such great importance that it should not be held by an individual who had already many duties to perform in connexion with other appointments. Correspondence has passed between the Local Government Board and the Corporation on the subject, and at the last meeting of the Corporation a letter from the Board was read requesting the Corporation to proceed to a new appointment. The Corporation has, however, refused to take further steps for the present, and now requests the Local Government Board "to indicate in what manner the power conferred by the Act to approve of the qualifications of a bacteriologist authorizes the Board to withhold its approval on grounds which do not relate to qualifications."

ABUSE OF COUNTY INFIRMARIES.

The abuse of hospitals by patients who are well able to pay for their maintenance is not apparently limited to the large towns, but is also met with in connexion with the small county infirmaries of Ireland. At a recent meeting of the Cookstown Board of Guardians it was found that out of nine patients recently treated in the Omagh Infirmary three were in a position to pay. This state of affairs, however, does not appear to trouble the minds of those responsible for the management of the infirmary, as further discussion showed that some of those patients who wished to pay had trouble in getting their accounts and had almost to press the payment on the hospital. This method of dealing with patients accounts probably for the difficulty stated to exist in making ends meet.

QUEEN'S COUNTY SANATORIUM.

The new Queen's County Sanatorium for Consumptives at Maryborough was opened by Lady Aberdeen on May 10th in the presence of a large assemblage. The building is situated in the grounds of the Queen's County Infirmary, and has been constructed of timber framing, with galvanized iron roofing and walls. Large verandahs have been provided, and the entire building is raised above the ground. Lady Aberdeen, in announcing the opening of the sanatorium, referred to the further decrease of tuberculosis in Ireland, as shown by the advance figures for 1910 published by the Registrar-General. It will be remembered that the years 1908 and 1909 showed a decline in the tuberculosis death-rate as compared with 1907, and it is now satisfactory to learn that there was a further decrease of 578 deaths during 1910, making a total decrease of 1,663 deaths from tuberculosis in 1910 as compared with 1907. The death-rate from tuberculosis in 1910 was 2.3 per 1,000, and was, in fact, the lowest recorded since 1864, the year in which registration of deaths was introduced.

ROTUNDA HOSPITAL.

At a recent meeting of the Board of Governors of the Rotunda Hospital a report was received from a special committee appointed some months ago to consider and report upon a proposal and scheme of the Master for the construction of two modern labour wards. The committee reported that a change was necessary, inasmuch as the large increase of maternity cases received in the hospital of late years had resulted in overcrowding, and that the proposed scheme was satisfactory and should be adopted. The scheme which was approved by the board will not necessitate any addition to the existing hospital buildings.

A SPORTING DOCTOR'S INJURIES.

An acute difference of opinion prevails between the Athlone guardians and the Local Government Board in reference to the payment of a medical substitute for Dr. Moorhead, J.P., dispensary doctor at Moate. Dr. Moorhead recently met with a severe injury while riding in a hunt race at Athlone, and the relieving officer of the district, acting within his authority, appointed a substitute. The guardians refuse now to pay the substitute, as the injuries were not received in the discharge of professional duties, and in reply to the Local Government Board—which has expressed the opinion that Dr. Moorhead is legally entitled to have a substitute appointed and paid by the guardians—the guardians have resolved that in no circumstances will they consent to the payment being made. The point raised is of much interest to dispensary medical officers, as obviously injuries may be met with under many circumstances unconnected with professional work, and, unless the Local Government Board now insists on its interpretation of the law, much difficulty will be met with in future in arranging for the payment of substitutes during the incapacitation of a medical man from injury or even illness.

Correspondence.

COMPLIMENTARY DINNER TO MR. BUTLIN.

SIR,—We desire to draw attention to a notice with regard to the above dinner which appears in another part of the current issue of your JOURNAL.

It will be a great convenience to the Dinner Committee if those who desire to be present will make early application for tickets. No special form is necessary, but a note, with a remittance of half a guinea, should be sent to the Honorary Secretaries of the Butlin Dinner Committee, 429, Strand, W.C.

The company will be arranged at separate tables, and a special table will be reserved for every ten diners who may signify their wish to sit together. A notice to this effect must reach the honorary secretaries on or before Thursday, June 8th. To facilitate the formation of special table parties the names of those who have taken tickets will be announced in the JOURNAL in due course. Those who organize such parties are requested to assure themselves that each member of the party has obtained a dinner ticket, and that no member's name is included in another similar list.—We are, etc.,

D'ARCY POWER,
W. GRIFFITH,
Honorary Secretaries, Butlin Dinner Committee.

CHRONIC INTESTINAL STASIS.

SIR,—In the BRITISH MEDICAL JOURNAL of May 6th, Mr. C. Gordon Watson draws attention to the fact that in a paper on chronic intestinal stasis[1] in which I gave the results of fifty cases of that condition treated by ileo-colostomy or colectomy, I did not make it clear whether

[1] BRITISH MEDICAL JOURNAL April 22nd, p. 915.

the cases published were consecutive or not, and if not, whether the cases omitted were failures.

I am much indebted for the kindness that pointed out this apparent omission, and I am taking the first opportunity to state that in following the results of this operation I had written to a very large number of cases and presented the first fifty I could arrange to interview during the last three months, or from whom I could obtain adequate information by correspondence with the patient or medical attendant. The cases were not selected in any other way, and I might have made my list much longer had space permitted.

Acting on the suggestion that the question of mortality was not adequately dealt with, I have since worked out all the cases that have been operated on by Mr. Arbuthnot Lane at Guy's Hospital since June, 1908, to the time of writing, that is, during the last three years. There have been in that time 42 cases of chronic intestinal stasis submitted to ileo-colostomy or colectomy. This number does not include the operations that have been performed for tuberculous infections or any condition other than the one under consideration. In spite of the desperate nature of the conditions to be dealt with, there have been only four deaths in this number. One died under the anaesthetic, one succumbed from shock, and two died from infection of the peritoneum from the abdominal wound.

This mortality of 9·5 per cent. is in marked contrast to that which holds in private practice, as there the patient is not allowed to advance so far as the hospital patient without treatment. I am assured by Mr. Arbuthnot Lane that in all those patients on whom he has performed short-circuiting or colectomy in private practice he has lost only one. This fatality resulted from the bursting of a small unsuspected abscess in the incision into the peritoneal cavity about eight days after colectomy had been performed. As far as I have been able to ascertain, 26 private patients have been submitted to operation, in 12 of whom the large bowel has been removed. This shows a mortality of under 4 per cent. in private work. From this list is excluded a case of very advanced ulcerative colitis in which caecostomy had previously been performed by another surgeon, and from whom he removed the large bowel.

The mortality will in future be reduced almost to the vanishing point, as the troublesome suppuration that occurred at one time in some of the abdominal wounds, and was the cause of death in 3 out of the 5 fatal cases, has been successfully met by the application of frequent extensive fomentations to the entire abdomen. Not only do these fomentations appear to safeguard the patient from the formation of foci of infection in the wound and the risks consequent on their presence, but add materially to the comfort and well-being of the patient, and definitely affect the length of the period of convalescence. They also appear to reduce the possibility of the formation of adhesions, which form the only source of anxiety or risk in cases of colectomy.—I am, etc.,

London, W., May 7th. HAROLD CHAPPLE.

THE POSITION IN OPERATIONS ON THE KIDNEYS.

SIR,—In reference to that portion of Mr. Deanesly's article[1] which relates to the above, may I point out that slipping in the lateral position is to a great extent prevented, and the breathing assisted, by raising the uppermost arm on Mr. Carter Braine's arm-rest,[2] or on an improvised support?

In the prone position, it is better for the head, instead of being turned on its side, to project beyond the table, with the forehead supported, the face (looking downwards) being left free. The anaesthetic can be very easily given, with the advantages that the tongue and lower jaw tend to fall and leave a clear airway, and that there is no straining of the neck with subsequent stiffness. It also favours respiration to support each shoulder by a firm cushion or sandbag, instead of crossing the arms under the chest. If the arms would be in the operator's way when lying by the patient's sides, they can be extended on each side of the head and (with the forehead) supported on a table.—I am, etc.,

J. D. MORTIMER, F.R.C.S.,
Anaesthetist, St. Peter's Hospital for Stone, etc.

London, May 6th.

[1] BRITISH MEDICAL JOURNAL, May 6th, 1911.
[2] Ibid., December 15th, 1900.

RENAL CALCULI AND CALCIUM METABOLISM.

SIR,—I have just noticed the letter of Dr. H. J. Johnston-Lavis in the JOURNAL of April 22nd criticizing the results recorded in my Hunterian Lecture and the lessons I attempted to draw, quite tentatively, from those results. I have made no claim to have settled definitely the ratio of preponderance of constituents in renal calculi, and my results are so different from the usual statements as to the composition of such calculi that I felt called upon to state in my lecture that they applied to my own analyses only, and should not, without more work, be applied to renal calculi in general. The question is not one which can be settled by argument but by accurate quantitative analyses of many renal concretions. I am doing my utmost to obtain material now, both renal calculi and gouty tophi, for such work, and would be most grateful for assistance from physicians at wells where patients drink calcareous waters, or elsewhere, for such materials.

Meanwhile I should like to protest against such statements as that of Dr. Johnston-Lavis that "some calculi that my patients have passed were stratified on an oxalic nucleus enclosed in a calyx or shell-like envelope of uric acid." The finest collection of calculi in this country, and probably in the world, is that built up around Hunter's original collection in the Museum of the Royal College of Surgeons, England. Many hundreds of these are catalogued as consisting wholly or partially of uric acid or urates, with most detailed descriptions of the composition of various layers of the stone; yet a naked-eye examination of the two halves of the sawn stone clearly demonstrates that the only material used for analysis must have been that obtained from the saw-cut, in which the contents of all layers would be inevitably mixed up.

In selecting illustrative material for my lecture, I could find only one stone in which, from the presence of artificial pits in the various layers, it was obvious that adequate material had been taken away for possible use in chemical analysis. This particular stone presented almost identical naked-eye appearances with half a dozen similar large stones labelled as uric acid. I thought I might here obtain a clue, and specially looked up the stone in the descriptive catalogue, when I discovered that it had been subjected to careful analysis where removed from the surface of the stone, *and that the stone consisted almost wholly of calcium oxalate.* Such large stones as this are rarely found nowadays, and it is my opinion, so far as I have been able to go, that those in older collections have often been falsely put down as uric acid and urates when consisting in reality of calcium oxalate. In any case, as the subject is one of great practical importance, careful and quantitative analyses of renal calculi are urgently required.

Turning to Dr. Johnston-Lavis's criticism of my cautiously expressed hints as to possible applications, I think he might have done me the justice of stating that I point out that the primary failure is that of oxidation, which produces alike calcium oxalate and calcium urate, and these both form calculi, because they are exceedingly insoluble salts. I mentioned the difficulty of reducing calcium intake so far as to prevent formation of these salts, and only suggested that it would be judicious not to pile on foods rich in calcium if the calcium salts are those chiefly present in calculi. But, surely, precisely the same argument applies to the proposal to prevent "absorption of exogenous oxalic acid in foodstuffs" so warmly advocated by Dr. Johnston-Lavis, as also the introduction of uric acid and nucleins so universal to other gout specialists.

Again, Dr. Johnston-Lavis practises at a well at Vittel, France, "where we use a non-chloride, calcareous water." This calcareous water produces marked results upon large numbers of patients. Now, although it may be quite impossible, as Dr. Johnston-Lavis contends, to reduce the input of calcium so as to affect patients advantageously, no method of thought which I can apply to the problem casts any light upon how the actual administration of calcareous waters can effect a cure.

I would humbly suggest an experiment to Dr. Johnston-Lavis: That, without interfering with any other circumstances of the cure, he should quietly substitute distilled water in the case of some of the suppliants at the holy well of St. Vittel, when he may obtain quite marvellous results, surpassing even those of the calcareous water. At any rate, we shall then know more clearly where we stand. It is the régime and the regimen at these baths

which make the cures, and also, perhaps, in part the psychological element, which induces the patient to take exercise and live as he would not live at home. Faith is a mighty healer when that faith leads to good works, and this, to my mind, is sufficient explanation of the efficacy both of holy wells and of wells which are—only medicinal.

Lastly, Dr. Johnston-Lavis poses me with the question of, Why tophi disappear from people who do the cure? In the first place, before answering I should like to know the composition of tophi, as I suspect we know as little about this subject as we do about the composition of renal calculi; and, secondly, I suggest that the tophi disappear because of the increased oxidation and decreased piling on of fuel involved in the "cure," and I am of opinion that the tophi would disappear at home with the use of distilled water substituted for Vittel water, and the patients carrying out the same "cure" in all other respects. But the latter process is precisely what no power will induce the patient to submit to when surrounded by home temptations, home cooking, home luxuries, and home occupations of working or idling.—I am, etc.,

Birkenhead, April 29th. BENJAMIN MOORE.

THE INFECTION OF CHICKEN-POX.

SIR,—The following case serves to confirm Dr. Hamilton's letter (April 29th) on the delayed incubation of chicken-pox by the concurrence of another infectious disease.

A boy visited an entertainment in London on May 4th where he was probably exposed to infection. He returned to school on May 6th. The rash of scarlet fever appeared on May 9th, after which he was completely isolated.

On May 31st the rash of chicken-pox appeared, and he had a very severe attack.

Here we have a *certain* incubation of twenty-two days, and a probable one of twenty-seven days. There was no possibility of infection by imported fomites after his isolation.—I am, etc.,

Wellington College, Berks, May 14th. H. G. ARMSTRONG.

SALVARSAN AND ARSENIC CANCER.

SIR,—I have read with the greatest interest the article by Sir Jonathan Hutchinson in the JOURNAL of April 29th. I have long wished that the secondary effects of arsenic and other metals should be investigated, because in my own researches I have found points which awakened interest on lines parallel to those opened by Sir Jonathan Hutchinson. I have proved that many of these metals hinder elimination of metabolic products, and those retained in the system undoubtedly increase tissue irritation throughout the body, thus causing endocarditis, arthritis, skin irritation, etc.; the irritation thus produced and repeated may, like that of soot, pipes, jagged teeth, paraffin, *x* rays, and heat, lead to the production of cancer, the irritation of all these substances being increased in the urate-laden.

The metals which have also fallen under suspicion in my mind are mercury, lead, iron, and silver.[1] It would be interesting to hear whether cancer is common among arsenic eaters, who, by the way, take it as a tonic and not for its "depressant" effects? Also whether diet factors appear to have any influence on the ultimate effects of arsenic in these people? In the same way the effects of arsenical waters might be of much interest in this connexion.

But, be this as it may, there is no doubt in my mind that in regarding only the immediate effects of these powerful drugs and forgetting their remote effects we are playing with edge tools.

I have elsewhere suggested that arsenic may cause endocarditis. I have also observed, as Sir Jonathan Hutchinson has, that it causes herpes zoster.—I am, etc.,

London, W., May 3rd. ALEXANDER HAIG.

THE HONOUR OF THE MEDICAL PROFESSION.

SIR,—The correspondence under this heading which has raised the question whether a jury of laymen is a proper tribunal to decide questions of the correctness of treatment of surgical cases, has in my opinion, not yet reached the core of the matter.

A patient calling in a surgeon has a right to expect, first, that the diagnosis shall be made with a reasonable amount of knowledge and care, and secondly, that the treatment applied shall be such as is generally approved for like conditions, allowing, of course, for the fact that no two cases are exactly alike, and that the medical attendant must use his own discretion, within limits, as to what deviation is required from ordinary accepted methods for the particular case. I say within limits with intention, as if any great deviation is made from accepted practice, the patient, or the patient's friends, should at the outset have the matter frankly explained to them, so that a complete understanding may be come to immediately and further advice taken if desired.

These cases of patients bringing actions for damages against surgeons involve the two points already stated—first, that of diagnosis, which concerns the science of surgery; secondly, that of treatment, which concerns the art or craft of surgery. Each case should be examined from these two points of view, and when so examined I venture to think that a lay jury is as good a tribunal as any of the suggested substitutes.

Let us assume that a case arose in which it was alleged by a patient that the sigmoidoscope was improperly used after an operation for suturing the lower end of the colon, and let us assume that a jury of medical men was assembled, strengthened by the inclusion of Mr. Lynn Thomas and Mr. Swinford Edwards. Is it not probable that we should read in the report of the case that "the learned judge discharged the jury as they were unable to agree"? Or is it suggested that counsel should challenge all those jurors who by their writings, or at medical societies, had previously expressed opinions as to the proper treatment of the condition under consideration, on the plea that they had already made up their minds and judged the case? If so, medical juries would at once be deprived of the assistance of all the best of the medical talent in the kingdom.

Mr. Lewis Morgan, in advocating a tribunal of medical men to deal with cases of this kind, instances as an analogy the assistance given by the Trinity Brethren to the Admiralty Court in collision cases. With submission, the two cases are not on a par; the Trinity Brethren merely inform the court which was the proper seamanship in certain circumstances, and whether the commanders of the two vessels followed the rule laid down as proper in the circumstances antecedent to the collision. These rules are as unvarying as the rule of the road, and any captain not conforming strictly to the letter of the law is at once in the wrong. Mr. Lewis Morgan's instance of the medical referees in county court cases under the Workmen's Compensation Act is most unfortunate. As Mr. Morgan knows so well, in these cases you have the spectacle of surgeons of equal eminence on each side in sharp conflict as to the nature and extent of the injuries under discussion.—I am, etc.,

Bridgend, April 30th. ROBERT J. SIMONS.

SIR,—I have read Dr. Powell's letter with care, but I cannot see that it helps Mr. Lewis Morgan's case. I am afraid I cannot claim to be distinguished, and this may perhaps serve as my apology for my inability to follow what, I am sure, are very subtle arguments.

It is humiliating to confess that, although I have been connected with the practice of the law for over twelve years, I was unaware until I had read this letter that the interpretation of the maxim that a man shall be tried by his peers meant "that he shall be tried by men who have an intimate knowledge of the subject in dispute." I am slowly realizing, thanks to this timely revelation, what a gross injustice litigants have been labouring under for years past. Think how obviously unfair it is to members of my own profession when an action is brought against one of them for negligence to have the case tried by a common jury instead of a jury of twelve fellow-lawyers.

Dr. Powell suggests that the appointment of a jury composed of medical men would be a change which would safeguard the interests of the public. From a moral standpoint I maintain such a jury would be a dismal failure. In spite of their natural integrity, such a jury would have an involuntary bias towards those of their own calling. It is not to be expected from human nature that the few should be always attentive to the interests and good of the many.

[1] BRITISH MEDICAL JOURNAL, November, 1909.

But apart from the ethical aspect of the case, the arguments betray a complete innocence on the part of your correspondent of the relative functions of a judge and jury in a case of negligence, or in any other case for that matter. In an action it is the duty of the Court to determine whether, assuming all the facts to be proved by the party on whom lies the burden of proof to be true, there is any evidence on which the jury could properly decide in his favour. And if there be not then the judge ought to withdraw the case from the jury. Whether there be *any* evidence is a question for the judge. Whether *sufficient* evidence, is for the jury. On the other hand, it is for the jury to hear the evidence and the comments made on it, to determine the credit due to the testimony of the witnesses, and to draw all requisite inferences of fact from the evidence. The division of the function of the judge and the jury is expressed by the maxim *Ad quaestionem facti non respondent judices; ad quaestionem juris non respondent juratores.* Thus, where the defendant in, say an action for negligence, gives evidence to prove that what he did was right and proper, it is for the jury to find the facts; and it is for the judge to decide, as a matter of law, whether the facts proved amount to negligence.

The facts being proved or admitted, then I agree it might seem desirable for the judge to have at hand experts whom he might consult in deciding any question of surgical skill. What use an expert jury would be, however, I fail to see.

Later, Dr. Powell claims for himself the right to use his own judgement in his profession, and he states that the public are given to understand that any departure from the orthodox methods of treatment is actionable at law, and equivalent to negligence. A remarkable statement from any one, surely; but from a justice of the peace—who would, of course, have more than a passing acquaintance with law—it is indeed amazing.

Far be it from me to suggest that a doctor should not exercise his own judgement. Indeed, it would be a sorry day for the profession if every doctor practised by rule of thumb, and were unable or unwilling to use his discretion as to how far he would conform to or depart from any accepted mode of treatment in any particular case. But between an honest endeavour to do his best for a patient and a gross and reckless experimenting there is a great difference.

To render a medical man liable for negligence it is not necessary that there should have been a less degree of skill than some other medical man might have shown or a less degree of care than even he himself might have bestowed. Nor is it enough that he himself has acknowledged some degree of want of care. There must have been a want of competent and ordinary care and skill to such an extent as to have a bad result.—I am, etc.,

Bridgend, May 4th. C. J. H. KAPPEL.

"SIGNS AND SYMBOLS OF PRIMORDIAL MAN."

SIR,—Allow me to correct some of the conclusions my friendly critic has expressed in your issue of April 8th. He states:

> In several instances recognized authorities, whose opinions are at variance with those of the author, are simply dismissed without further argument as being inaccurate or erroneous. For example, in discussing the meaning and import of the "cable-tow," we are told that Father Burgo and Juan de Cordova are wrong in their translations, and that the ceremonies which they observed and described "show how ignorant they were of the true meaning of the ceremony." It is not made clear why they are wrong. Again, on page 15, Dr. Churchward writes that Dr. Edward Seler "has not succeeded in giving the true decipherment of any of his translations of the various codices of the Mayas, Mexican, and Central American nations that he has attempted to" . . . "It is to be regretted that the author is so prone to attribute 'lamentable ignorance' to those who do not agree with him."

As regards the cable-tow, if my friend had been initiated into Freemasonry he would not have written the above, where the cable-tow is used, and the reason given at the present day. But even if he is not a Freemason he could not have read the paragraph above the one he refers to (p. 205), because there I distinctly state the use of the cable-tow and its symbology as used by the high priests of the Druids, priests of Egypt, and therefore the priests in America, their religious rites, signs, symbols, and ceremonies being identical.

As regards Dr. Edward Seler and other German translators of the Codices (E. Förestemann, Carl Supper, Paul Schallhas, and E. P. Dieraldorff), the greater part of Chapter VI is devoted to positive proofs why these gentlemen are absolutely wrong in their decipherment. I have given photographs (and my decipherments of the same) taken from Mexican Central American antiquities, Calendar Systems and History, published in Bulletin 28 of the Smithsonian Institute Bureau of American Ethnology, which contains the papers by these gentlemen translated by Charles P. Bowditch, and any one who will read their decipherments of these photographs and codices and mine cannot be left in doubt. Take, for example, the 20 day sign of Dr. E. Seler, p. 86; design for a vase from Chama, p. 93; Dr. E. Seler's dancer, p. 101, Fig. 47, p. 109; and his goddess of Maze, p. 104, Fig. 49, p. 115; Fig. 54, p. 122. I do not think that any one would require further evidence for conviction than the facts I have here mentioned, a conclusion amply borne out by a critical study of these and the Ritual of Egypt.

If polygenism is not yet dead, few, I believe, are there to keep the dying embers alive, and these few could not have any knowledge of the comparative anatomy and physiology of the lower human races, such as the pigmy, bushman, and nilotic negro, and other aboriginal natives in various parts of the world allied to them; or they do not believe in the evolution of the human race. To these men no arguments or facts found and brought forward would convince; such as the long forearm, the width between the radius and ulna, the very large caecum and colon containing a great number of bacteria producing a cellulose-digesting ferment associated with glands therein to excrete fluid to digest the outer part of the vegetable cells, and absorption of food from the result, in the colon, as found in the lower animals which feed on a "vegetable diet," which we find in the pygmy, bushman, and to a lesser extent in the nilotic negro, and its final disappearance in the white race, and the development of the brain and skull, as well as many other parts. Professor Keane may believe the human race to have originated somewhere in the Indo-Malayan region, as a good many people believed in what Professor Max Muller taught about the origin of language and Aryan races; but few believe any of this now, since research has proved these beliefs to be false. What facts has Professor Keane to prove his belief? I distinctly and advisedly say none against those which I have brought forward.

Zoologists may think that they are finding evidence of "convergence," and may think and believe that morphological similarities do not of necessity mean phylogenetic kinship, and that similarity of natural surroundings have given birth to similar elemental ideas in the primitive mind leading to comparable rites and ceremonies in different parts of the world. Professor Frazer in his recent large work has come to this conclusion, which critically in my opinion is opposed to all facts. Totemism and Totemic rites all over the world and amongst all tribes, past and present, are fundamentally the same, have the same meaning, *are sacred ceremonies*, have the same signs and symbols and pass-words or sacred words, all identically the same; he could give no explanation that could be satisfactory why in New Guinea you find one tribe, with certain characteristic anatomical conditions, with a Totem of a sow or pig, and in Africa and South America you find tribes identically the same in every way, with the same mother Totem, and another tribe in New Guinea, with different anatomical conditions, has the crocodile for a Totem, and you find tribes in Africa and South America identically the same on every point. Dr. Lorentz and his companions, who met some of these people in New Guinea, did not understand their sacred rites as admitting them as members of their Totemic tribe by the sacrifice of a pig and sprinkling the blood of the same upon them. The sow or pig amongst these people, as a zootype of the "Great Mother," is quite understood by those who have learnt totemic ceremonies and Stellar-Myths. The form of zootype would prove at what date these people left Egypt, like the bear of the Ainu, the lizard of the Australians, the beetle amongst the tribes around Panama, and the tortoise in North America. I can go, and have gone, amongst many savage tribes without the least fear of danger, because I know the Ritual of Ancient Egypt, and only here lies the key that will unlock the past, and from

whence all came, and here only can the meaning and origin of the human race, the Totemic rites and ceremonies be found; all can be traced from here, and nowhere else in the world is this possible. It is the same with "language."

The primary forms of language can only be found amongst the pygmies and bushmen in Africa; the inner African language proves that words had earlier forms than those which have become the "roots" of the Aryanist. Gesture-sign and idiographic symbols preserve the earliest language in visible figures, which have never been taken into the range of discussion by the Aryan school.

I contend that what is written in *Signs and Symbols of Primordial Man* are all facts which I have proved by a great many years of research, and is critically conclusive.—I am, etc.,

South Norwood, May 6th. ALBERT CHURCHWARD.

THE ANNUAL MEETING, BIRMINGHAM, 1911.

SIR,—May I ask your indulgence in making known to the members of the British Medical Association attending the annual meetings in Birmingham this July that Leamington has ample accommodation in hotels and lodgings, and an excellent service of trains, many of them not taking more than twenty-six minutes. If more than 150 members were assured, I have obtained a concession from the railway company to run a special train, timed to suit the convenience of members, to whom the company will issue weekly season tickets.

Those members who think of making this their annual outing with their wives may be glad to know of this arrangement, and if they will communicate with me I will see that a list of apartments and hotels is sent them, and also, if the number warrants it, that the before-mentioned arrangements are completed with the railway company.—I am, etc.,

HAROLD MASON, M.B.,
Mayor.

The Mayor's Parlour,
Town Hall, Leamington Spa,
May 9th.

HEARTS OF OAK SOCIETY.

SIR,—May I ask the medical men of Kingston to refrain from accepting either of the following appointments until the members of the Kingston and District Medical Society and the local Division of the British Medical Association have expressed their opinions of them:

1. Medical Examiner of Candidates for the Hearts of Oak Society for this district.
2. Medical Officer to a Hearts of Oak Medical Club recently formed here.

I have held the appointment of local medical examiner for eighteen years, and am also the medical officer of the local Hearts of Oak Men's Club, which has existed since 1874. But now a disagreement has arisen with the Hearts of Oak Society, because, with the aid of the Medical Defence Union, I have opposed their agent, who though living in Richmond, has canvassed Kingston, for members to form a new medical club here.—I am, etc.,

Kingston Hill, May 15th. W. E. ST. L. FINNY.

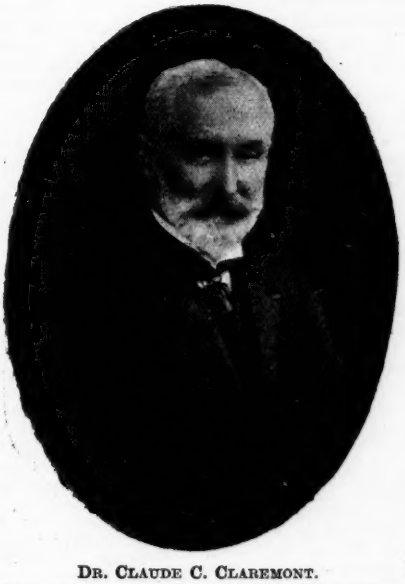
Obituary.

CLAUDE C. CLAREMONT, M.D.LOND.,

PHYSICIAN TO THE ROYAL PORTSMOUTH HOSPITAL.

ON April 30th Dr. Claude C. Claremont passed away, after a short illness, at his residence in Southsea. His much-lamented death occurred just at the time when, after a long period of earnest work, he was advancing to a position of increased distinction and success.

Dr. Claremont was the eldest son of the late Dr. Claude Claremont of London; he was born in 1855, and received his early education at the North London Collegiate School, and his medical training at University College. He was a very diligent student, and in 1877 he obtained the diploma of M.R.C.S.; in 1879 the degrees of B.S. and M.B. of the University of London; and a few years later the degree of M.D. He was appointed in 1878 House-Surgeon to the Sheffield Public Hospital and Dispensary, and then House-Physician at the Seamen's Hospital, Greenwich. Subsequently he acted as Assistant Medical Officer at the Charing Cross Hospital. In the year 1881 he was appointed House-Surgeon at the Royal Hospital, and afterwards occupied for some time the post of Senior Officer of the Out-patient Department. During the last twelve years he has been Honorary Physician on the senior staff of the institution. He was also Consulting Physician to the South Hants Eye and Ear Infirmary, and to the Maternity Charity of Portsmouth. Dr. Claremont was an enthusiastic worker, and his valuable services will not be forgotten, for it can be truly recorded that through his professional life he laboured to advance the usefulness and reputation of all the medical charities of the locality.



DR. CLAUDE C. CLAREMONT.

Photograph by] [*A. Debenham, Southsea.*

The British Medical Association has lost a very active and devoted member. In 1892 Dr. Claremont was appointed to the office of Honorary Secretary of the South East Hants Division of the Southern Branch, and in 1899, when the annual meeting of the Association was held in Portsmouth, he filled the post of Local Secretary, and by his practical ability and courteous manner helped much to secure the successful result.

By his painstaking and careful discharge of every duty, Dr. Claremont gained the confidence of all his professional friends. He was a wise physician, and exhibited persistent energy in the performance of his professional work. Often after spending many long hours in the wards of the hospital he would not rest until he had visited urgent cases at their own homes, and personally carried out the treatment for their relief. He was at all times an eager student, and took a deep interest in the progress of the science of medicine, and especially in the intricate questions which surround the pathology of infective diseases and their treatment by bacterial vaccines.

But in addition to all his professional attainments Dr. Claremont had a very considerable acquaintance with many other branches of science. He firmly believed in the growing expansion of human knowledge, and confidently anticipated the advance of science in every field. For some years he found recreation and pleasure in carrying on the work as Honorary Secretary of the Portsmouth Literary and Scientific Society, and in 1905 he held the position of President of the institution.

In manner he was naturally calm and reserved, but there was another bright side to his estimable character—he was under the guidance of the highest and best convictions which regulated his daily life and brought out, without any ostentation, his genuine goodness. To-day there are many sorrowing who have experienced his kind help and sympathy in the hour of difficulty and distress. He is survived by his wife, two sons, and two daughters.

The funeral took place at Southsea on May 4th, and around the grave all his colleagues and many friends assembled, deeply regretting the early termination of his devoted and faithful life.

AFTER a somewhat prolonged period of ill health, Dr. GEORGE MACKAY of Edinburgh died on May 4th, at Latour,

Vevey, Switzerland. He was educated at the High School of Edinburgh, and afterwards at the University of Edinburgh, where he graduated M.B., C.M. in 1874. Afterwards he studied in Paris and London. He was a Resident Physician in the Royal Maternity Hospital in Edinburgh, and House-Surgeon in the Dumfries and Galloway Infirmary. Later he was private assistant to Sir Halliday Croom. He settled in Edinburgh, and soon built up a considerable family practice, and was held in high esteem and even affection by a large clientèle. Four years ago he lost his elder son, a young man of great promise, of endearing personality, who had taken the highest honours in his medical course and was just about to graduate, and to whose future career Dr. Mackay was looking forward with great hope. This blow may be said to have taken the spring of life from him, and he was never the same man again. He left Edinburgh in October of last year for Arcachon, in search of health. Later he went to Pau and to Vevey. For a number of years he was Physician to the Fountainbridge Dispensary in Edinburgh, and he also held several other appointments in the same city. His recreation was golf, to which he was devoted. He is survived by his wife and one son.

Yet another Crimean veteran has passed away in the person of Surgeon Thomas Ligertwood, C.B., M.D., Royal Army Medical Corps, late Physician and Surgeon to the Royal Hospital, Chelsea, who died at Chelsea at the age of 81. He was educated at Aberdeen, and took the degree of M.B. in 1851. Entering the Army Medical Service in the same year as an Assistant Surgeon, he was made Surgeon, October 20th, 1856; was placed on half pay, January 13th, 1869; and retired from the service, June 3rd, 1904. He was appointed Deputy Surgeon to Chelsea Hospital, January 13th, 1869, and Surgeon with the rank of Colonel, June 3rd, 1896. He served in the Crimea in 1854–6, and was present at the affair at Bulganac, the battles of the Alma (for which he was mentioned in dispatches) and Inkerman (where he was slightly wounded), the capture of Balaklava, the sortie of October 26th, 1854, and the assault on the Redan in June, 1855. He was granted a medal with three clasps, and the Turkish medal, and appointed a Knight of the Legion of Honour. Dr. Ligertwood was for many years medical officer in charge of the infirmary of the Royal Hospital, Chelsea, and showed a keen interest in the work of that institution.

Universities and Colleges.

UNIVERSITY OF OXFORD.

The following degree has been conferred:

D.M.—F. J. Sadler.

UNIVERSITY OF CAMBRIDGE.

The following degrees have been conferred:

M.D.—Christopher Tylor.
M.B.—A. Abrahams, H. L. Attwater, H. Chapple.
B.C.—A. Abrahams, H. L. Attwater.

UNIVERSITY OF LONDON.

Appointment of Examiners.

The following are among those appointed staff examiners for the academic year 1911-1912:—*Forensic Medicine and Hygiene:* William A. Brend, M.B., B.Sc., and Henry Franklin Parsons, M.D., D.P.H. *Medicine:* Professor Alfred Henry Carter, M.D., M.Sc., F.R.C.P., Sidney Philip Phillips, M.D., F.R.C.P., G. Newton Pitt, M.D., M.A., F.R.C.P., and Humphry Davy Rolleston, M.A., M.D., B.C., F.R.C.P. *Mental Diseases and Psychology:* Robert Jones, M.D., B.S., and William McDougall, M.B., B.Ch., M.A., M.Sc. *Obstetric Medicine:* Henry Russell Andrews, M.D., B.S., M.R.C.P., and George H. Drummond Robinson, M.D., F.R.C.P., M.R.C.S., D.P.H. *Pathology:* Professor Albert S. Grünbaum, M.D., M.A., F.R.C.P., D.P.H., and Professor Richard Tanner Hewlett, M.D., F.R.C.P., M.R.C.S., D.P.H. *Pharmacology:* James Calvert, M.D., B.A., B.Sc., F.R.C.P., M.R.C.S., and Professor Ralph Stockman, M.D. *Physiology:* Joseph Barcroft, B.Sc., M.A., F.R.S., and John Sydney Edkins, M.A., Sc.D., M.B. *State Medicine:* John William Henry Eyre, M.D., M.S., D.P.H., and Henry Franklin Parsons, M.D., D.P.H. *Surgery:* Albert Carless, M.S., M.B., F.R.C.S., Raymond Johnson, M.B., B.S., F.R.C.S., Henry Betham Robinson, M.D., M.S., F.R.C.S., and William Thorburn, M.D., B.S., B.Sc., F.R.C.S. *Tropical Medicine:* Charles Wilberforce Daniels, M.B., M.R.C.P., M.R.C.S., and Andrew Duncan, M.D., B.S., B.Sc., F.R.C.S.

Also appointed in respect of the First and Second (Part I) examinations for the M.B. are:—*Chemistry:* John Addyman Gardner, M.A., F.I.C., and James Ernest Marsh, M.A., F.R.S. *Physics:* George William Clarkson Kaye, D.Sc., B.A., and Professor Frederick Womack, M.B., B.Sc. *General Biology:* Frank E. Beddard, M.A., F.R.S., and Malins A. Smith, M.A.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An extraordinary Comitia was held at the College on Thursday, May 11th, the President, Sir Thomas Barlow, in the chair.

Fellowship.

The ten gentlemen elected at the Comitia on April 27th were admitted Fellows of the College.

Communications.

The following communications were received:

1. From the Editor of the *Journal of the Royal Army Medical Corps*, asking permission to photograph a portrait of Dr. Richard Brocklesby, in the possession of the College. Permission was granted.

2. From the Registrar-General, inviting criticism upon a revised copy of his *Suggestions to Medical Practitioners Respecting Certificates of Causes of Death.* This was referred to a subcommittee, consisting of the Registrar and Dr. Rolleston, for consideration and report to the College.

Representative on the Senate of the University of London.

The resignation of Sir William Allchin, Representative of the College upon the Senate of the University of London, was accepted with regret, and a cordial vote of thanks was passed to him for his disinterested labours during his tenure of the office.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

An ordinary council was held on May 11th, 1911, Mr. H. T. Butlin, President, in the chair.

The Walker Prize.

Dr. E. F. Bashford, Superintendent of the London Imperial Cancer Research Fund, to whom was awarded the Walker Prize of £100 for the best work done during the past five years in advancing the knowledge of the pathology and therapeutics of cancer, was introduced to the council, and the President handed to him the prize, together with a document declaratory of the award.

Diploma of Membership.

Diplomas were issued to eighty-four candidates found qualified at the recent examination.

Vacancies on the Court of Examiners.

Two vacancies, occasioned by the resignation of Mr. C. T. Dent and Sir Frederic Eve, will be filled up at the meeting of the council on June 8th. Fellows wishing to become candidates should apply in writing to the secretary on or before Monday, May 29th.

ROYAL COLLEGE OF PHYSICIANS IN IRELAND.

The Fellows of the Royal College of Physicians in Ireland have just passed, after prolonged discussion, a revised scheme for the examination for membership of the college. The most important feature in the new scheme is the facility now extended to candidates for specialization in various branches of medicine.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The two examining boards of the college became constituted as follows on the conclusion of the election on May 2nd.

Court "A" (for the preliminary examination, conjoint diplomas, and licence in Surgery). *Anatomy:* D. P. Fitzgerald, A. Campbell Geddes, and G. Jameson Johnston. *Surgery:* C. Arthur K. Ball, Robert J. Harvey, J. B. Moore, and Seton Pringle. *Physiology and Histology:* J. A. Scott. *Pathology and Bacteriology:* Arthur Hamilton White. *Midwifery and Gynaecology:* Frederic W. Kidd. *Biology:* John J. Burgess. *Ophthalmology:* Arthur H. Benson and Herbert H. B. Cunningham. *Chemistry:* Robert J. Montgomery. *Sanitary Law and Vital Statistics:* Edward F. Stephenson. *Engineering and Architecture:* James H. Fergusson. *Languages:* William Kennedy. *Mathematics, Physics, Dictation, and English Essay:* J. R. Colter.

Court "B" (for the Fellowship and the licences in Midwifery and Dental Surgery).—*Anatomy:* A. Campbell Geddes and G. Jameson Johnston. *Surgery:* C. Arthur K. Ball, Leveson G. Gunn, J. B. Moore, and S. Pringle. *Physiology and Histology:* E. L'Estrange Ledwich and J. Alfred Scott. *Pathology and Bacteriology:* Robert J. Rowlette and Arthur Hamilton White. *Midwifery and Gynaecology:* Frederic W. Kidd. *Chemistry and Physics:* Edwin Lapper and Robert J. Montgomery. *Dental Surgery and Pathology:* George M. P. Murray and William G. Story. *Mechanical Dentistry:* Daniel L. Rogers and Edward Sheridan.

APOTHECARIES' HALL OF IRELAND.

The following candidates have been approved at the examination indicated:

Final L.A.H.—Le G. M. Denslow, H. Hutchinson, R. O'Connor, J. B. O'Donoghue, H. B. Rosair.

CONJOINT BOARD IN ENGLAND.

AT a meeting of Comitia of the Royal College of Physicians on April 27th, and of the Council of the Royal College of Surgeons on May 11th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred by the colleges upon the undermentioned candidates:

H. G. Alexander, C. V. Anderson, F. J. Anderson, H. P. Ashe, C. C. Beatty, E. C. Beddows, I. B. Bernstein, J. C. Barucha, J. L. Birley, A. M. Bodkin, G. N. Brandon, W. Broughton-Alcock, C. J. Butler, N. S. Carruthers, A. H. Crawford, K. J. A. Davis, J. A. Dalmeke, H. T. Depree, H. de Silva, G. J. F. Elphick, J. C. Ellis, H. A. Evans, H. J. B. Fry, J. Gavronsky, E. L. P. Gould, W. G. Grant, H. S. G. Haji, E. W. Hall, B. Hannah, C. I. Harmar, C. H. Hart, A. W. Havard, R. G. Hill, J. F. Hoare, I. R. Hudleston, G. R. Hughes, L. C. D. Irvine, A. H. James, H. L. James, N. C. Kapur, W. E. Latham, W. E. Levinson, J. C. R. Lind, M. Lindsey, N. F. Lock, A. J. McNair, W. G. Marsden, W. G. Masefield, M. M. Melrose, H. A. Moody, C. G. H. Morse, J. G. Moseley, J. B. Patel, H. F. Percival, H. Platts, J. Pryce-Davis, I. A. Razzak, T. S. Rippon, S. Ritson, W. D. Ross, R. A. Rowlands, F. Sanders, H. E. Skargill, T. S. Sharpley, R. H. Sheard, W. Smith, E. N. Snowden, H. L. H. Steele, C. H. Steinbach, J. F. Taylor, F. S. Tinker, J. W. Trevan, D. O. Twining, R. T. Vivian, M. E. T. D. Vlasto, *J. O. D. Wade, W. W. Wagstaffe, C. B. Wainwright, H. B. Walker, H. P. Warner, A. F. Waterhouse, E. P. W. Wedd, H. White, A. T. Williams.

* M.R.C S. diploma only granted.

The Services.

RED CROSS CITY OF LONDON BRANCH.

ON May 13th four complete female voluntary aid detachments raised from the women staff of the Prudential Assurance Company had a field day at Bromley, where they were most hospitably entertained to lunch and tea by the chairman, Mr. Dewey, who placed his large grounds at their disposal.

The morning was occupied in forming up and posting the officers and nurses to their respective detachments and by drill and instruction under their commandant. After lunch a comprehensive scheme of practical work drawn up by the A.M.O., Colonel Broome Giles, V.D., and the County Director, Colonel Harrison, C.V.O., was most intelligently carried out, namely: Two large buildings were cleared and converted into hospital wards, with bedsteads, linen, etc.; wounded were collected, treated, and conveyed to this temporary clearing house and appropriately treated.

As these detachments have been taught from the commencement from the R.A.M.C. Manual by R.A.M.C. officers and nurses of the City of London Territorial Association they were familiar with military equipment. All hold the first aid certificate granted by St. John's, and have recently passed the examination of the Red Cross Branch of the City of London after a course of instruction in nursing, sanitation, and cooking, and will receive the City of London certificate.

The managers of the Prudential Assurance Company, we are informed, give four special holidays to these detachments for the purpose of practical field training.

INDIAN MEDICAL SERVICE.

AN examination for not fewer than twelve commissions in the Indian Medical Service will be held in London on July 24th next and the five following days. Particulars as to pay, promotion, etc., in the service and the necessary forms for application to compete can be obtained from the Military Secretary, India Office, London, S.W.

Medical News.

AT the West Ham and Eastern General Hospital on May 10th Miss Ough, who has recently resigned her appointment as Matron of the hospital, was presented with a purse containing a cheque for over fifty guineas, subscribed for by the staff, the committee, and other friends, as a memento of her fifteen years' work thereat.

THE annual general meeting of members of the Edinburgh Royal Infirmary Residents' Club will take place in the Caledonian Station Hotel, Edinburgh, on Friday, June 16th, at 7 p.m. The seventeenth annual dinner will follow at 7.30, when Sir Watson Cheyne, Bart., C.B., president of the club, will occupy the chair. A memento of his term of office will be presented at the dinner to Colonel Warburton from residents who have served under him. Members intending to be present must send their names to the Secretary, at 10, Alva Street, on or before June 13th.

A COUNCIL meeting of the Association of Medical Officers of Health was held at the Holborn Restaurant on May 12th, Dr. Rashell Davison, President, in the chair. The treasurer reported a balance in hand of £28, excluding outstanding subscriptions. It was decided to remind members that since an arrangement had been arrived at with the editor of *The Medical Officer*, whereby members were afforded the privilege of obtaining this journal at a reduced subscription, together with a quarterly supplement devoted to the interests of part-time medical officers of health, it became necessary that the small annual subscription of 5s. a year should be paid as promptly as possible. Dr. A. Butler Harris was appointed editor of the quarterly supplement. The secretary reported that the membership stood at 253. The consideration of the letter from the Council of the British Medical Association with reference to Minute 234, Annual Representative Meeting, Belfast, 1909, was postponed until the next monthly meeting of the council on June 2nd.

THE tournament of the Medical Golfing Society will be held this year on Thursday, June 15th, at Canons Park, Edgware, by kind invitation of the Edgware Golf Club. Play will be as follows: Eighteen holes match play *v.* Bogey under handicap. Class I. Handicaps 12 and under. Class II. Handicaps over 12. The "Henry Morris" Challenge cup and the Medical Golfing Society's gold medal will be awarded for the best return under handicap. A first and second prize and a prize for the best last nine holes will be given in each class. In addition, the medical members of Edgware Golf Club are kindly presenting a prize for the best first nine holes. There will also be a cup presented by Mr. Canny Ryall for the best gross score. Any one on the *Medical* or the *Dental Register* can join by payment of the annual subscription, 5s., which includes entrance to the tournament. Entries should be sent on or before Monday, June 12th, to L. Eliot Creasy, Honorary Secretary and Treasurer, the Medical Golfing Society, 36, Weymouth Street, London, W.

AN exhibition and sale of work made by the scholars in the Heritage Craft Schools for Crippled Boys and Girls at Chailey was held this week at South Lodge, Rutland Gate, by permission of Lord and Lady Llangattock. It was announced that the special appeal issued by H.R.H. Princess Louise Duchess of Argyll on behalf of funds for the new buildings had met with a generous response. The honorary secretary also stated that the next development at Chailey would be a residential trade school for the girls, where those unfit for ordinary workroom life in London would remain under the excellent conditions at the Heritage, and lead an independent life without risk to their health. In connexion with the special appeal, a meeting in aid of the medical side of the work will be held in the Jehangier Hall, University of London, South Kensington, S.W., on Friday, May 26th, at 3.30 p.m. Sir Thomas Barlow will be in the chair, and will be supported by Sir Frederick Treves, Sir Lauder Brunton, Sir Alfred Pearce Gould. Mr. Jonathan Hutchinson, Mr. Openshaw, Mr. Mayo Robson, Mr. A. H. Tubby, and many other eminent members of the medical profession. Academic or official costume will be worn.

AT a meeting in support of the Ealing College for Training Teachers of the Deaf, which comprehends both a training college for teachers and school for deaf children, recently held at Grosvenor House by kind permission of the Duke and Duchess of Westminster, the Earl of Bessborough was in the chair, and amongst the speakers were the Right Hon. Henry Chaplin, Sir Frederick Milner, M.P., Mr. Macleod Yearsley, Mr. B. St. John Ackers, the Rev. A. S. Thompson (honorary secretary) and Dr. G. E. Shuttleworth. Mr. Chaplin commented on the useful work done by this society in training teachers for the education of the large number of children who were deaf but not defective, and who were capable, by the oral method, of learning to speak to their fellows, and take part in the ordinary business of the world. He thought that the excessive parsimony of the Board of Education as regards grants made for the training of such teachers was most discreditable, especially when it was considered how much was squandered in the equipment of teachers for the ordinary elementary school. There was actually a superfluity of the latter class of teachers, while for the deaf there was an insufficient number to meet the demands for instruction. He thought the Ealing Institution had a good case for a grant, and he should be only too glad if he could help them to obtain it. Mr. Macleod Yearsley followed with an interesting account of the modes of education which had been found effectual with the deaf, deprecating the attempts recently made to depreciate the value of oral teaching. He laid stress on the need of physiological as well as pedagogical education in the successful training of the deaf, and advocated the necessity of beginning such training during infancy. The report submitted showed much useful work done in the school at Ealing as well as in the training college, but the balance sheet presented a regrettable excess of expenditure over receipts, partly due to the expense of sanitary improvements undertaken at the Ealing establishment.

Letters, Notes, and Answers.

Authors desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* British Medical Journal *are devoted will be found under their respective headings.*

QUERIES.

H. A. F. asks for information with regard to the case of a young man in whom, on eating Brazil nuts, blebs appear immediately on the parts where the nuts touch, that is, the tongue and mouth; if he touches his lips or eyelids with the fingers which have held the nuts the blebs appear there also.

Bacilluria.

Salol asks: What is the precise significance of the presence of *Bacillus coli* in the urine, and the appropriate treatment?

General Psoriasis.

Senex writes: I am much obliged to the various correspondents who have assisted me with advice in a case of the above. Of the various remedies tried, I have found the ol. cadini recommended of considerable use. Applied to one forearm, including the elbow, the psoriasis has quite disappeared, but I cannot apply it to face, owing to the dark discoloration it causes. Is there any way of getting the ol. cadini of the *Pharmacopoeia* bleached so as to avoid the staining?

The Prescription of Glasses.

Dr. Kenneth Campbell (London) writes: In reference to his article on this subject, may I be allowed to inquire of Mr. Reginald A. Morrell what he means by the following: "The result was that the lens lost its convexity, and so the apparent myopia became less, and the real or static refraction of the eye, which is a myopia of one dioptre less than the apparent, myopia remained" (British Medical Journal, p. 1110). It is usually taught that in the condition of static refraction of the eye, the radius of curvature of the anterior surface of the crystalline lens is 10 mm. Does Mr. Morrell wish us to understand that in the particular case he alludes to, the front of the lens, during the attacks of neurasthenia, becomes a plane surface? Accepting the ordinary definition of static refraction as "the refraction of the eye at rest" (the maintenance of the "tone" of the ciliary being implied), is it Mr. Morrell's usual practice to over-correct the myopia of his patients, or does he confine this method of treatment to his neurasthenic patients?

ANSWERS.

Pyrethrum against Mosquitos.

F. J. W. P.—*Pyrethrum cinerariaefolium* furnishes most of the insect powder of commerce, which consists of the ground unexpanded flower heads; a tincture of the powder is applied to the skin to protect from insect bites. The *British Pharmacopoeia Codex* gives a formula for this tincture, prepared with 60 per cent. alcohol by the method of percolation, one part of the powdered flowers yielding four of tincture; this is stated to be diluted with ten times its volume of water for use as a lotion to keep away insects. We do not know of any secret remedy called "Pyrethrum"; probably the preparation referred to is a tincture of the kind described.

Paper Eating.

Dr. R. H. Botham (Darlington) writes to suggest that the case related by "J. S. F." could be cured by hypnotic suggestion. Previously the patient should be asked while under hypnosis, for the reason of her habit. The answer might shed some light on the workings of the subconscious mental processes.

Haemospermia.

Dr. C. F. Marshall writes in answer to "C. G. F.": Haemospermia generally signifies spermato-cystitis, or inflammation of the seminal vesicles, which may or may not be associated with epididymitis. It is usually of gonorrhoeal origin. The condition does not preclude marriage altogether, but it is advisable to postpone marriage till the symptoms have subsided, and examine the secretion for gonococci from time to time. "C. G. F." will find the treatment described in my book on *Syphilology and Venereal Disease*.

LETTERS, NOTES, ETC.

Meat for Babes.

Dr. Stanley Hodgson (Salford) writes: The "curious superstition" to which you refer in your note to "Baby's Food's" letter is one which is shared by no less an authority than Dr. Galabin. In his *Midwifery* (4th edition) he states that children at the seventh month should be put on some whole meal food, and also should have gravy or beef-tea with bread crumbs. Personally, I carry out the first part of his advice whenever I can, and always advise the second part from 1 year. The results have been excellent, especially with my own children. In common with a large number of general practitioners, it is dawning on me that the scientific feeding of infants fails as hopelessly, in many cases, as the prescientific efforts of the old midwives. One gets rudely shocked when, after an elaborate discourse on the right and wrong dietetic elements, one is shown a splendidly healthy child who has been brought up on everything he ought not to have.

Evidence of Severe Illness afforded by the Nails.

Mr. Seymour W. Davies, M.B., Ch.B.Vict. (Liscard, Ches.), writes: With reference to Dr. Norman Flower's note on the above, in the Journal of April 15th, p. 869, with note by Sir Samuel Wilks, I note that the latter says that in all the cases he has seen or known where transverse marks and furrows appeared in the nails during illness, the patients have been at death's door at the time when the furrows were formed. I have just had a boy under my care with scarlet fever, who had an attack of nephritis with haematuria, but who was never seriously or dangerously ill, either subjectively or objectively. On recovery a deep transverse furrow, like a seam, was found on every nail on hands and feet. These grooves have grown from root to edge of nail much more rapidly than is usually the case, as they are now ⅔ of the way down at twelve weeks from onset of illness. In fact, one or two have reached the edge. I should like to know if this is a common feature in scarlet fever.

The Expression of the Colour-Blind.

Dr. F. W. Edridge-Green (London) writes with reference to a note on a communication from Dr. G. H. Taylor, Medical Officer of the Government Railways in New South Wales, published in the Journal of April 22nd, p. 972: I have not examined a single case of dangerous colour blindness which has not been readily and easily detected by my lantern, though I have often examined as many as 5 cases in one week who could pass the Holmgren test with the greatest ease and yet failed with the lantern. I have demonstrated these cases and shown that a man may be able to pass the Holmgren test and yet be made to say that the red light of the lantern is green and the green light red at will by the proper selection of the colours and using them in the correct order. In using my lantern, it is absolutely necessary that the examiner knows the real facts of colour-blindness and is not dependent only on the hypothetical statements given in the textbooks. The most difficult procedure in testing for colour-blindness is the method of arriving at a decision that a man who has been rejected by the Holmgren test is still an efficient person for railway and marine service. Every case of this kind, if not normal-sighted, can be detected with the lantern, but those I should pass I have found by the use of the spectrometer and other methods to have been rejected wrongly. A man, for instance, may have shortening of the violet end of the spectrum, which will lead him to put certain confusion colours with the test green. This, however, is a defect of no practical importance.

Extraction of Cataract in the Capsule.

We have received two further communications from Major G. H. Fink, I.M.S. (ret.), relative to his criticism of Smith's method of dealing with cataract. In the first he emphasizes the difficulty of settling such a controversy by letter and articles, especially when the correspondents live in widely separate parts of the world, and claims that if the test suggested by him is not practicable the verdict must fall on his own side. In the second he states that the possibility of learning the after-results of operations in India depends largely on the province in which they are performed. In the united provinces of Agra and Oudh, in which he himself served, the civil surgeon, if he took note of the addresses of his patients, could trace them when making tours of his district for vaccination and other purposes. He also found that patients were quite willing to report themselves at any time if their condition allowed them to travel, and provided that arrangements were made for their travelling expenses, and for their keep during the time they were at head quarters. But natives in different parts of India cannot, he admits, all be treated alike in this matter, so the difficulties of ascertaining late results may in some districts be much greater than he himself found them to be.

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